ENGINEERING NEWS-RECORD

A McGRAW-HILL PUBLICATION

E B POWER
UNIVERSITY MICROFILMS IN
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ANN ARBOR MICH

HORTON ELEVATED TANK

. . . a New type of "All-Star" for Notre Dame

Until recently the University of Notre Dame maintained two separate water distribution systems—a lake water system for general service and a deep well system for drinking purposes. This two platoon system posed a health threat because of the chance that untreated lake water might be used for drinking purposes.

By installing the 500,000-gal. Horton radial-cone bottom elevated tank shown at right, and increasing the use of its wells, Notre Dame scored a victory over the hazard. A single system now provides simpler operation and positive sanitation is now in use. Perhaps you have a problem similar to Notre Dame's—one that an elevated tank can easily solve. Horton elevated tanks are built in standard capacities from 5,000 to 5,000,000 gallons. Write our nearest office for further information.

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Four TR-200's work up to 460 hours a month . . . average only 4 hours down time

In less than a year, the George W. Kerford Quarry Company, Atchison, Kansas, put 3,828 hours of work time on each of their four Allis-Chalmers TR-200 Rock Wagons. They piled up 460 hours a month over one five-month period. During the year, service down time for each unit averaged only 4 hours a month . . . this means that each rock wagon was on the job over 98 percent of working time!

The TR-200's have been hauling quarry stone from the pit to a crushing plant 1½ miles away. Loads average 16 tons and each cycle is completed in 14 min. Fuel consumption has been about 3¼ gal per hour with no oil needed between changes.

George E. Kerford states, "We like the TR's maneuverability and easy control, which makes it possible for any good truck driver to learn to drive the outfit quickly. The wagon body is well constructed and cleans easily and completely. We find that most parts needing frequent maintenance and repair are easily accessible."

HERE ARE THE FEATURES BEHIND THIS OUTSTANDING RECORD

Big bowl top makes excellent target for shovel or dragline operator, helps loading under bins or chutes.

High power-to-load ratio of 16 hp per yard of capacity speeds hauling, helps on steep grades.

Maximum lift angle of 70 degrees speeds dumping of any type material. Big opening and "bathtub" design slide loads out fast at minimum dump angles.

Dumps 30 in. back of rear wheels to put entire load over banks or into hoppers.

Wheel base stays fixed during dumping cycle for greater safety on banks, accuracy in spotting loads.

Four-wheel air brakes allow full control, safer dumping over banks.

Hydraulic control system raises or lowers bowl while traveling, gets TR-200 into position sooner.

176 hp engine — 5 speeds forward to 21.6 mph, reverse 2.5 — 11 yd struck, 15 yd heaped, 18 tons

Write for complete catalogs or ask your Allis-Chalmers dealer for a demonstration

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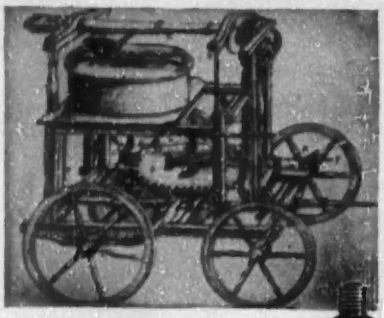
17th century PENCIL SHARPENER?



Well, whatever it is, complex as it appears, this drawing is not nearly as complex as the engineering drawings of today. The need for drafting precision has increased steadily over the years.

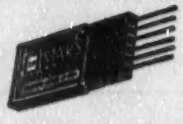
To keep pace with this need, Staedtler has made constant improvement in pencil design and manufacture ever since the first Staedtler pencils were produced in Nurnberg, Germany, in 1662 – about the time the above drawing was made.

Today, the Mars-Lumograph is America's finest imported drawing pencil. In the clutch pencil field, the combination of the new 1001 Mars Technico push-button lead holder and 1904 Mars-Lumograph imported drawing leads insures your having the very best.

The 2886 Mars-Lumograph drawing pencil gives you precise thickness and the blackness of line needed for crisper, cleaner prints. Perfectly graded in 19 degrees—EXEXB to 9H. $1.50 per dozen—less in quantity.

The 1001 Technico Mars-Lumograph push-button lead holder costs no more than ordinary holders, has a noiseless, smooth-working, low-friction clutch mechanism, lightweight wood construction with perfect balance and, built into the push-button cap, a unique lead sharpener. $1.50 each—less in quantity.

1904 Mars-Lumograph Imported Drawing Leads are so opaque that inking-in is not necessary. Leads are ribbed for firm clutch grip and each has a metal cap which prevents sliding from holder. Available in 18 degrees—EXB to 9H. $1.20 per dozen—less in quantity.



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Robert F. Boger

Publisher

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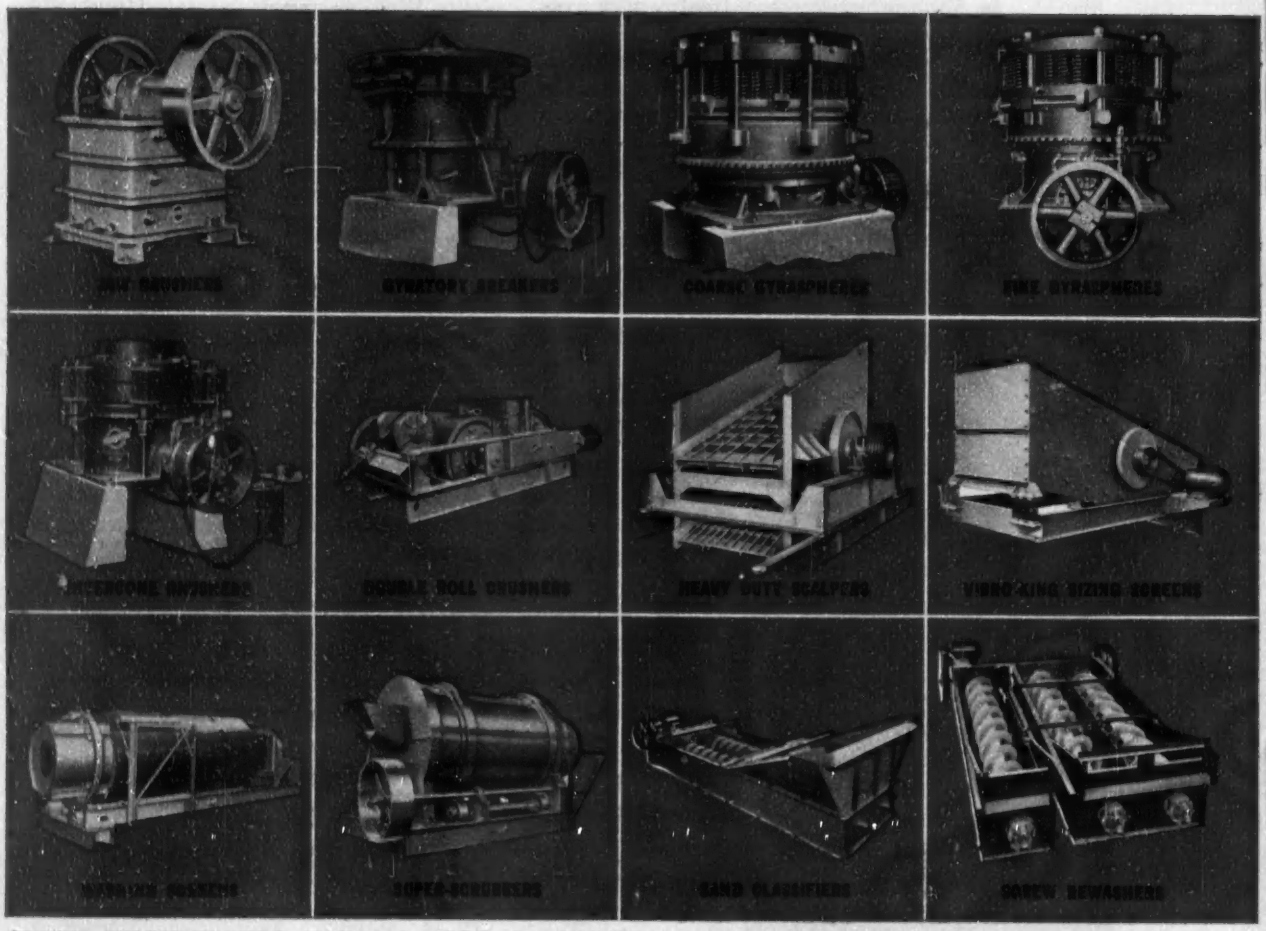

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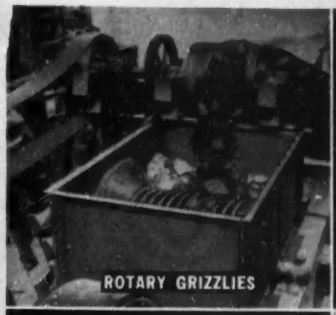

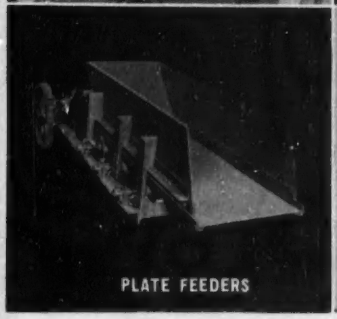

GET THIS CHECK-UP

ON YOUR EQUIPMENT

Is your plant, and particularly its equipment so designed and built that it meets all your deposit and market needs? Is capacity high . . . and upkeep low? Does it pay the profits it should for the money you have invested? These are the *equipment facts* you're looking for. You'll find them in this guide. All the latest data on the newest equipment—Telsmith-engineered, modern, flexible, and the right type, model and size to turn out quality aggregate in quantity, at low cost.

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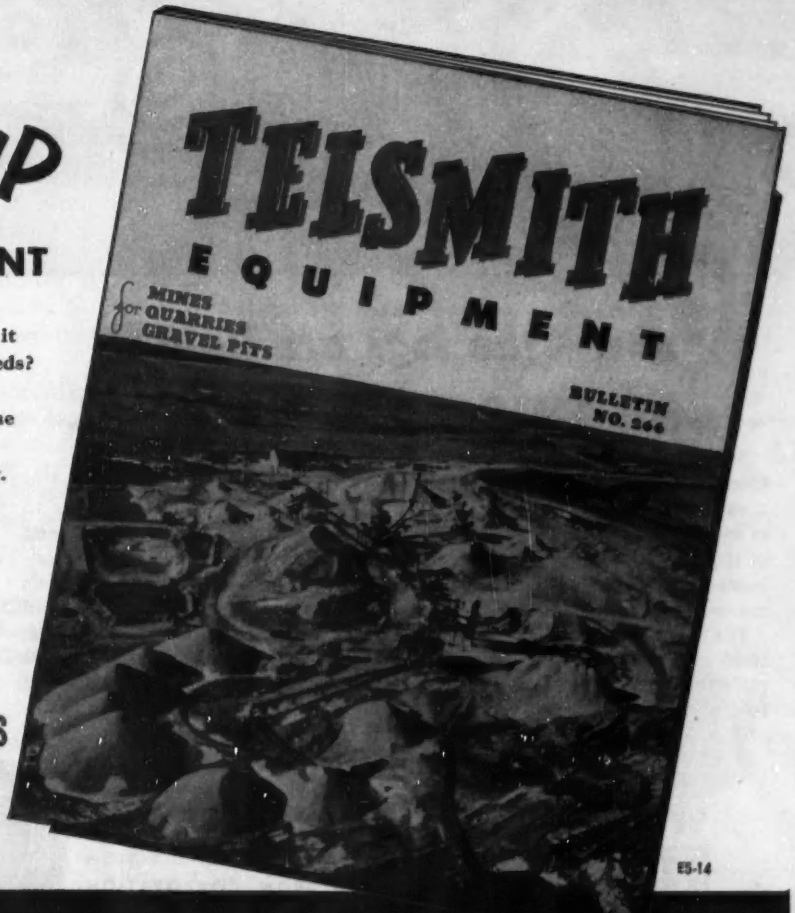
let them relieve you of technical detail in plant planning and equipment selection.



E5-14

NEW EQUIPMENT GUIDE No. 266

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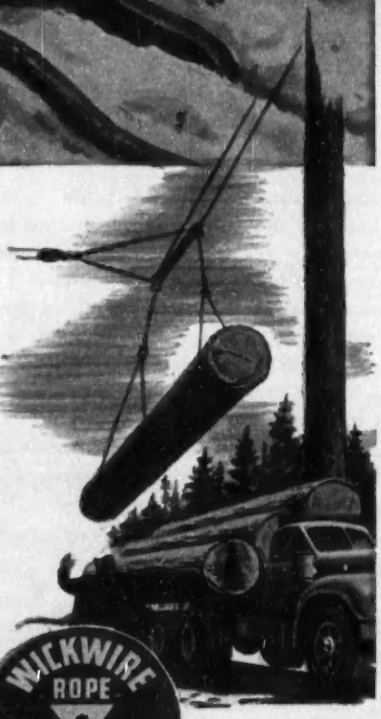
now—the logs are lighter with MUSCLES OF STEEL

Gone are the days when muscles of man and beast were the only means of loading and hauling big timber out of the woods. Supplying present-day lumber needs is a job that would lick ten thousand Samsons.

It's a job that demands *muscles of steel*—rugged wire rope that lifts and pulls the heaviest logs with strength to spare.

We of Wickwire play a big part in furnishing these *muscles of steel* to American industry. Wherever wire rope is used—timbering, drilling, construction, mining, fishing, materials handling—there also you'll find Wickwire Rope helping to do a better, more efficient job. That's the reason for the quality and extra care that go into its making.



every industry benefits from wire rope

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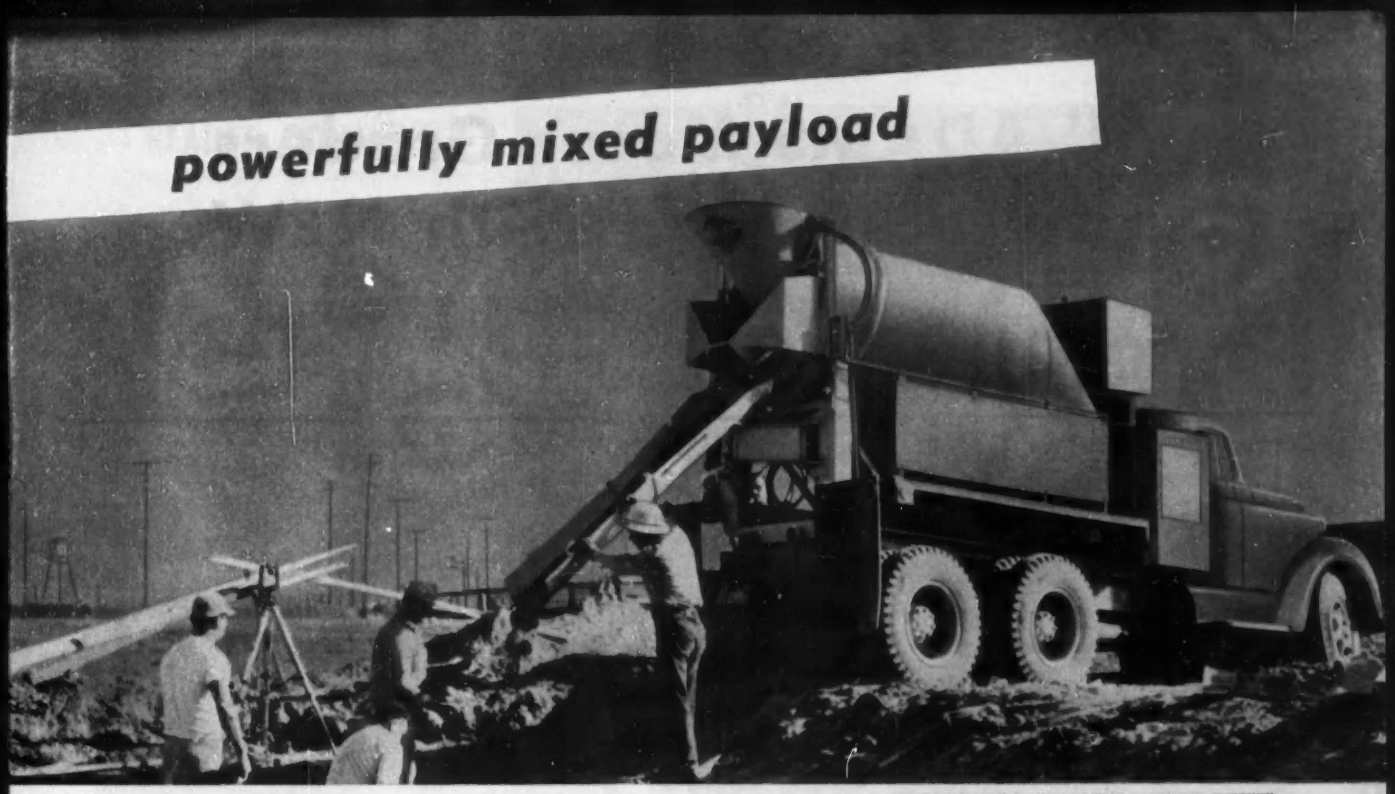

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CHRYSLER POWER PARTNERS *help contractors break records, save on equipment while doing so*

This year promises to be a record year in highway construction. From coast to coast States are busy building super highways, planning others. Construction equipment was never busier, top-performing equipment never more important.

Here's a T. L. Smith 5½-yard Deluxe Mixer pouring concrete for a pier on a Los Angeles expressway. Behind its capable performance is a Model 30 Chrysler Industrial Engine. At 230 cubic inches piston displacement, Chrysler Model 30 Engine with chain drive front end offers high-speed performance in a package small enough to permit the largest possible payload.

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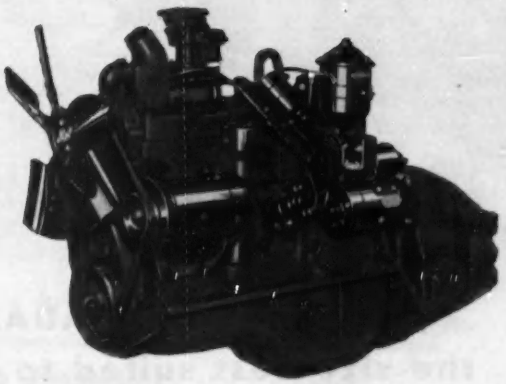
For your needs see a Chrysler Industrial Engine Dealer or write: ***Dept. 811, Industrial Engine Division, Chrysler Corporation, Trenton, Michigan.***



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READER COMMENT

Credit Due

SIR: The October 7, 1954 issue of Engineering News-Record, page 276, carries an article on a proposed tunnel under Havana Bay and a suburban development project northeast of Havana. It was stated that the overall plan for this work is an outgrowth of a tunnel study made in 1949 by Knappen-Tippetts-Abbett-McCarthy, Consulting Engineers of New York.

We would like to advise that for the 1949 studies we were associated with Ole Singstad, Consulting Engineer of New York, and Earle M. Rader of Miami, Florida. The report was made for the government of Cuba and included comparative bridge and tunnel studies for the Havana Bay Crossing and a preliminary plan for the urbanization of the area northeast of Havana. As far as we know none of the parties to the 1949 studies are connected with the present project.

ROBERT W. ABBETT
Knappen-Tippetts-Abbett-McCarthy
New York

Bouquets or Brickbats?

SIR: Referring to your article (ENR Nov. 4, p. 90) concerning our arbitration proceedings with the Carpenters, your editorial staff has quickly recognized that the basic issue involved is the Union's challenge to the sanctity of association-bargained agreements, not only in the sense that they apply to all the members of the particular association but also—and equally important to all non-members and all non-members who are non-resident or out-of-the-area contractors performing work within the geographical jurisdiction of the particular agreement.

I believe that a practical and enduring service to the industry could be performed by a series of articles on those construction firms to which we refer as non-resident contractors.

There are non-resident contractors who deserve recognition for their awareness of local problems and their responsibility to the community.

Unfortunately, however, there are those whose policies reflect the attitude: "I've got a job to do and it's going to be done regardless of the consequences to others resulting from any action that I may take."

Then there are the strikebreakers, both resident and non-resident, who sign "letters of intent" to abide by the terms of the eventual settlement pro-

(*Continued on page 11*)

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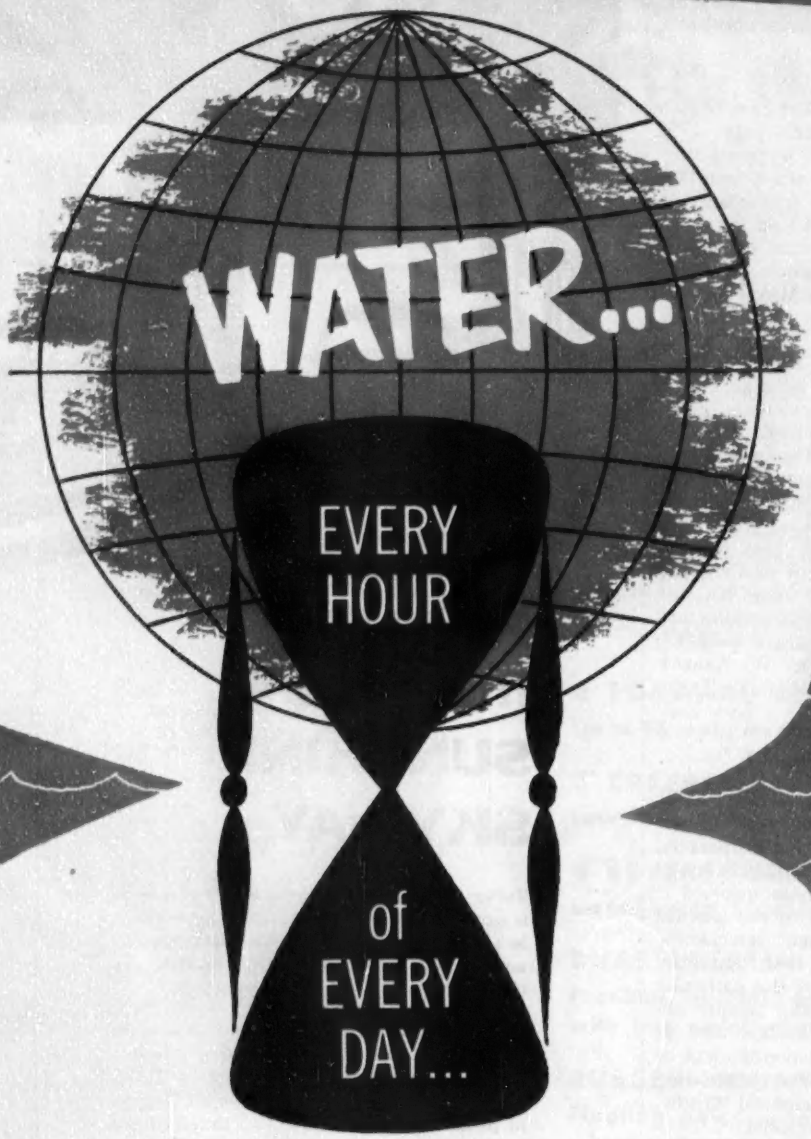

Every hour of every day of every month of every year more gallons of water are pumped by Layne pumps than there are people in the whole wide world. That world endorsement of Layne quality and Layne "know how" in developing ground water resources and in engineering water installations is the strongest possible reason for consulting Layne—first—on any question relating to water.

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READER COMMENT

viding they are supplied with men during the course of the strike.

It seems to this writer that much good could be done for the industry by tossing a few bouquets to those firms who follow a policy of becoming a respected "citizen" of the communities in which they perform work —and also in some appropriate manner publicizing the delinquents.

DONALD F. DAVIES
Executive Secretary
Northern New York Building Trades Employers
Saranac Lake, N. Y.

Hoover Medal not AICE's

To correct possible misconception—the Hoover Medal awarded to Alfred P. Sloan, Jr., Oct. 19 (ENR Oct. 21, p. 25) was not awarded by the American Institute of Consulting Engineers. The honor was merely handed out on the occasion of AICE's dinner in New York during the week of the ASCE meeting. The Hoover Medal, founded in 1929, is administered jointly by ASCE, AIMME, ASME and AIEE.

CALENDAR

Hot Mix Asphalt Paving Associations, national meeting, Conrad Hilton Hotel, Chicago, Nov. 12.

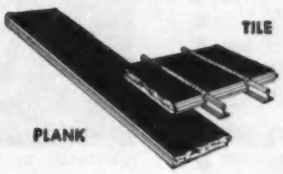
Building Research Institute, research conference on modular measure, National Academy of Sciences, Washington, D. C., Dec. 9.

American Road Builders Association, convention, Roosevelt Hotel, New Orleans, Jan. 10-13.

National Association of Home Builders, convention, Chicago, Jan. 16-20.

Associated Equipment Distributors, annual meeting, Conrad Hilton Hotel, Chicago, Jan. 23-27.

Mason Contractors Association of America, annual convention, Jefferson Hotel, St. Louis, Jan. 30-Feb. 2.



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50th

MARKS FIRST HALF CENTURY OF MADE POSSIBLE BY THE INVENTION C. B. LOWRY, FOUNDER OF THE

THE durability of wood was a problem even in earliest times. The first country, however, to realize that wood preservation was a matter of national importance was England during the 18th century when her forests were being depleted to build and maintain a vast merchant fleet and navy. The problem became increasingly severe during the 19th century in England and in Europe with the growth of the railroad systems.

The threatening timber famine touched off feverish experimentation to find a suitable wood preservative, but none was found until about 1838, when John Bethell patented his process in England. At about this same time, preservatives other than creosote (dead oil of coal tar) were introduced, but the Bethell creosoting process proved to be the most reliable and, to a great extent, replaced all other processes abroad.

By 1880, it was becoming evident that the vast forests of the United States were being depleted at a high rate and that the time for action to prevent complete exhaustion was approaching. In this year, the American Society of Civil Engineers appointed a committee to study the problem. After several years of study, the committee reported that the Bethell Creosoting Process was the most effective method of wood preservation, but the cost was prohibitive due to the high price and scarcity of creosote in the United States, and the excessive amounts required to do a suitable job.

It was not until about 1904, after the development of the Lowry Process and the founding of the American Creosoting Company, that modern wood preservation was born.

FIFTY YEARS AGO, in a plant at Shirley, Indiana, the Columbia Creosoting Company started wood preserving operations for the Big Four Railroad Company (New York Central System) with a revolutionary technique called the Lowry Process. The rest is history. The Columbia Creosoting Company went on to become the American Creosoting Company of today, and its birth marked the beginning of the modern era of wood preservation.

The Lowry Process opened the door to the modern era by making it possible to impregnate wood successfully with far less creosote and in far less time than was required with Bethell's method. The Lowry Process cut the cost of creosoting practically in half.

Mr. C. B. Lowry, a founder of the American Creosoting Company, conceived the idea for his process about 1902, demonstrated it in an experimental plant for the Big Four Railroad at Riverside, Ohio in 1903, used it in commercial operations for the Big Four at the Shirley plant in 1904, and applied for a patent in 1905.

A method of treatment later known as the Ruping Process was introduced in Germany. Although there were important basic differences, the Ruping method was similar to the Lowry process insofar as it reduced the quantity of creosote used. Afterward, the German inventor of the Ruping Process filed an infringement suit against Lowry.

Anniversary

MODERN WOOD PRESERVATION OF THE LOWRY PROCESS BY AMERICAN CREOSOTING COMPANY

That Mr. Lowry and his company were the founders of modern wood preservation is amply proved by the decisions in these suits rendered by the United States Courts and the United States Patent Office.

An extract from these decisions is as follows:

"The Examiner of Interferences found that Lowry conceived the invention long prior to Ruping's introduction of it into this country, and that he did not derive his knowledge of it from Ruping's agents. That he successfully reduced it to practice with an experimental apparatus in the shops of the "Big Four" Railroad Company, at Riverside, Ohio, in November, 1903. That he communicated it to others, and in the spring of 1904 began efforts to build a plant at Shirley, Ind. for the operation of the process, which was prosecuted with diligence, and the process put into commercial operation on the completion of the plant.

"The Examiner-in-Chief concurred with the Examiner of Interferences in all respects save the reduction to practice at Riverside in 1903. On account of Lowry's earlier and independent conception, and subsequent diligence they concurred in awarding the priority to him.

"The Commissioner agreed in all respects with the Examiner of Interferences. We agree also that the evidence is sufficient to show that Lowry, prior to the experiments with the Ruping Process at Perth Amboy in April, 1904, had begun plans for the erection of the Shirley plant, which were diligently followed by completion and the practice of the process on a large scale."

Ruping filed an appeal in the United States Court of Appeals of the District of Columbia. The court upheld the decision of the U. S. Patent Office. Then Ruping filed an appeal in the U. S. Supreme Court, but a hearing was refused on the grounds that the case had been adequately handled by the lower tribunals. These years of litigation established, once and for all, that Lowry was the founder of modern wood preservation.

In this Golden Anniversary year, it is with great satisfaction that Amcreco looks back over a long record of service to industry and to our country in helping conserve the valuable timber resources of the land. Amcreco is also proud of its important contribution to modern forestry in the development of its great Satilla Forest in Georgia. But not content to rest on this record, Amcreco is looking forward to serving both industry and country with the same vision and vigor and high standards which have characterized the Company's policy for the past fifty years.

In an industry where so much depends on service, Amcreco offers facilities second to none. Our plants and sales offices are strategically located for prompt domestic or export shipment. We would appreciate an opportunity to quote on your needs.

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AMCREO
LOWRY PROCESS
CREOSOTED WOOD

Georgia Forest Products Company
Gulf States Creosoting Company
Georgia Creosoting Company
Kettle River Company

The barrel does the bearing job better

In the fight against friction, engineers are using a new kind of bearing . . . a bearing built with barrel-shaped rollers.

Developed by Hyatt, the Barrel Bearing is "dual-purpose"—it takes both radial and thrust loads. But—and this is the important difference—unlike *ordinary* dual-purpose bearings, the Hyatt Barrel *operates at full load-carrying capacity under conditions of misalignment!*

Because of this self-aligning feature, loads on the Barrel Bearing are always ideally distributed over large areas of contact between races and rollers, with greatest load concentration at the strongest part of the rollers—at their major diameter. Roller ends cannot be overloaded.

But that's not all. The barrel shape of the rollers combines low rolling friction with high load-carrying capacity—making the Barrel Bearing ideal for a wide range of applications. And here's the clincher: this superior bearing is far less costly than you'd expect—thanks to a new manufacturing process used only by Hyatt.

Does that cover it? You might think so, but it doesn't. There isn't enough space on this page to tell you everything about this new bearing. For full information, write to the address below.

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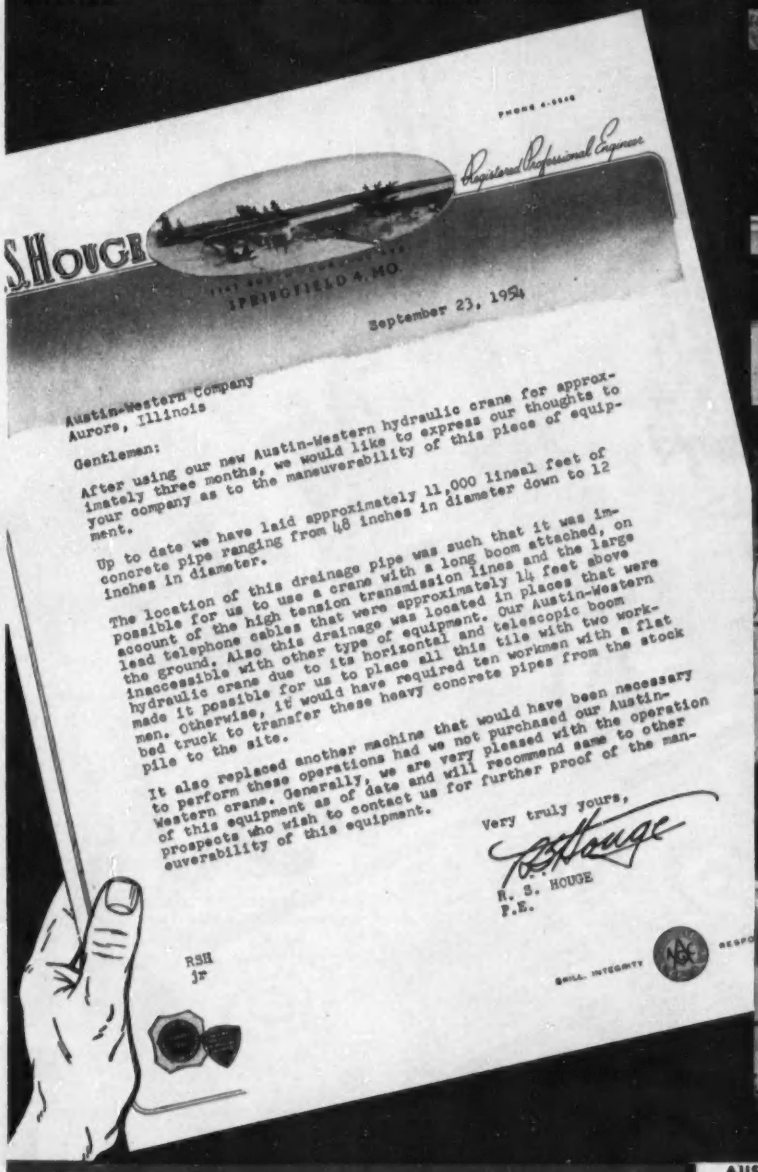
STRAIGHT BARREL TAPER

HYATT BEARINGS DIVISION • GENERAL MOTORS CORPORATION • HARRISON, N. J.

TAKE IT FROM A MAN WHO KNOWS

HERE'S A MISSOURI CONTRACTOR WHO SAYS...



PHONE [illegible]

Registered Professional Engineer

R. S. HOUGE

SPRINGFIELD 4, MO.

September 23, 1954

Austin-Western Company
Aurora, Illinois

Gentlemen:

After using our new Austin-Western hydraulic crane for approximately three months, we would like to express our thoughts to your company as to the maneuverability of this piece of equipment.

Up to date we have laid approximately 11,000 lineal feet of concrete pipe ranging from 48 inches in diameter down to 12 inches in diameter.

The location of this drainage pipe was such that it was impossible for us to use a crane with a long boom attached, on account of the high tension transmission lines and the large lead telephone cables that were approximately 14 feet above the ground. Also this drainage was located in places that were inaccessible with other type of equipment. Our Austin-Western hydraulic crane due to its horizontal and telescopic boom made it possible for us to place all this tile with two workmen. Otherwise, it would have required ten workmen with a flat bed truck to transfer these heavy concrete pipes from the stock pile to the site.

It also replaced another machine that would have been necessary to perform these operations had we not purchased our Austin-Western crane. Generally, we are very pleased with the operation of this equipment as of date and will recommend same to other prospects who wish to contact us for further proof of the maneuverability of this equipment.

Very truly yours,

R. S. HOUGE
P.E.

RSH
jr

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THE CONSTRUCTION WEEK

POWER BLOCK?—Canada's federal government apparently isn't at all happy about an agreement between Kaiser Aluminum and the British Columbia government for power production to feed Kaiser's U. S. plants.

That was clear enough in remarks by Robert H. Winters, Canadian Minister of Public Works, as he prepared an address for an anniversary celebration of the Cleveland Engineering Society.

Said Winters: Kaiser plans to build a dam (for $26 million) in the Arrow Lakes region of British Columbia, ship the power across the border to plants in Washington. The federal government feels the province has no right to sign such an agreement. "If there isn't a law now to block it," commented the works chief, "we will seek new legislation in January."

OKAY ON MODULES—Bricklayer union President Harry C. Bates rather proudly announced his union had endorsed the principal of modular coordination —first building trades group to do that.

The module of the standard brick itself (2¼x3⅝x8 in.) has of course long been an accepted one in construction. Lately, however, said bates, many other forms of modular masonry units have become available, have been found easy to work by the masons.

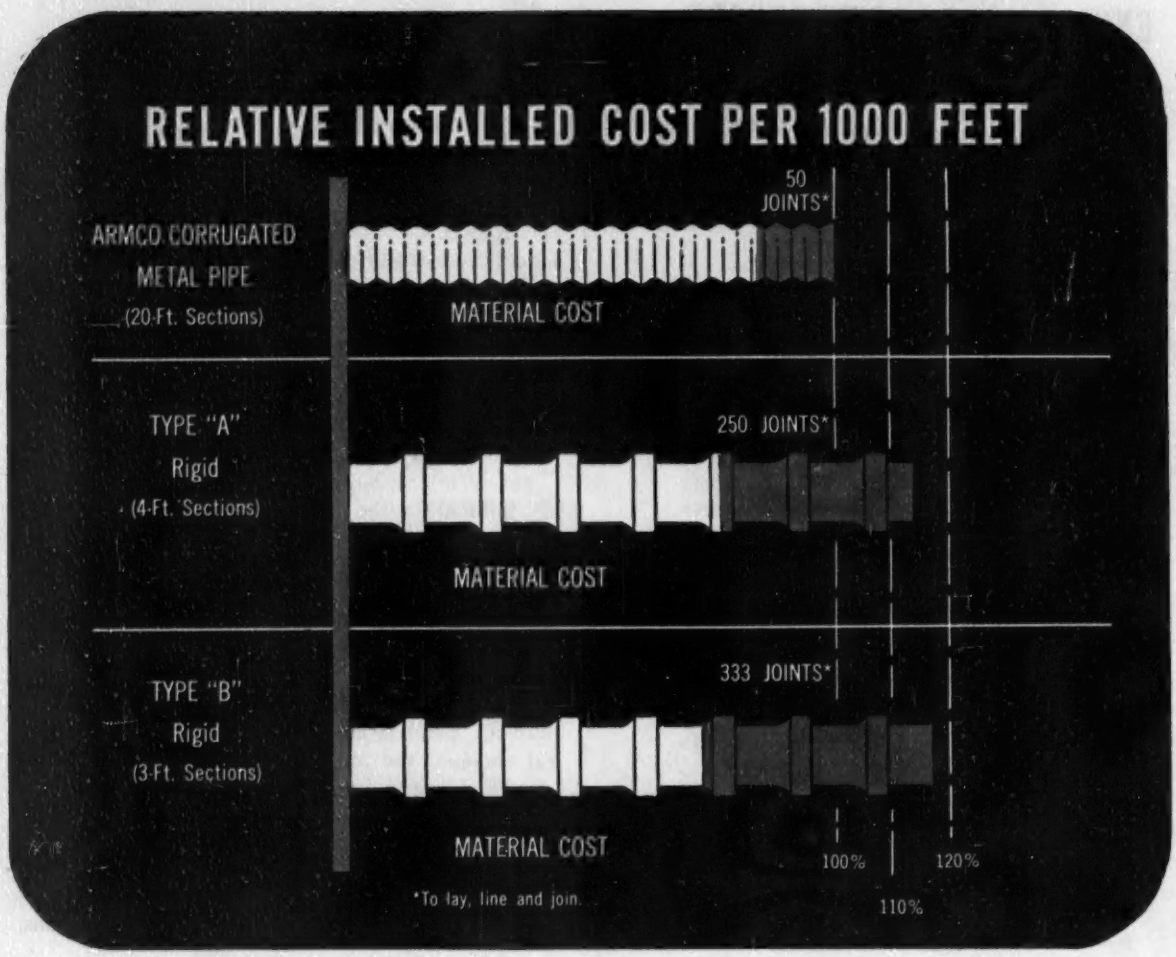
POLLUTION PROTECTION—Striking at a long-felt need, Pennsylvania health officials are sparking a campaign for legislation that would permit official supervision of water supplies and sewerage facilities in non-urban areas.

Objective: to protect home buyers against inadequate sewerage and water facilities. Officials complain that, without supervision, some builders of outlying developments have skimped on installations, with resultant expense and health risk to home buyers.

EXPENSIVE ERROR?—Akron (Ohio) School Board members are due to consider soon whether a contractor must lose his $51,000 bid bond because of a bidding error on a million-dollar high school building.

Montgomery Construction Co., Grove City, Pa., entered the low bid at $997,000—a figure, board representatives said, that was understood to include general contracting, site improvement, plumbing and electrical work. The contractor hastily asked to withdraw his bid, on the plea that he had intended to bid only on general contracting work—not anything else.

Board members agreed to wait until after elections to figure out what to do.



How do YOU figure drainage jobs?

It's the *installed* cost that counts! And that is where Armco Corrugated Metal Pipe saves you time and money. Let's see why. Long sections of Armco Pipe, compared to short-section rigid pipe, reduce the number of joints required by 80 per cent or more. There are fewer sections to lay, line and join with no delay for curing. Handling is easier. And thanks to the strength of corrugated metal, there is less chance for breakage. No wonder you can speed the job and save money in the bargain. Armco Corrugated Metal Pipe is supplied in diameters from 8 to 96 inches. Lengths range up to 24 feet. Bituminous coatings or ASBESTOS-BONDED Pipe protect against severe corrosion. Write for illustrated catalog. Armco Drainage & Metal Products, Inc., 1444 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation. In Canada: write Guelph, Ontario. Export: The Armco International Corporation.

ARMCO DRAINAGE STRUCTURES

WASHINGTON OBSERVER

The election puts the party of big public works programs back in charge of Congress. Almost any way you look at it, construction can hardly be hurt—and may very likely come out ahead (see page 21).

Eisenhower's $50-billion highway program makes him a big public works man—and his aides figure that if the highway idea goes through, there are schools, hospitals, sewer and water projects that could be built and should be built.

Democrats may quibble over how it's to be done. For instance, they may raise their hands in horror over the idea of putting the additional debt onto the books of a new corporation. A lot of Democrats may suggest that it would be more honest just to add the debt where it actually belongs—in the regular budget.

•

But political infighting won't stop the trend toward more public works. For example, you may find that the Democrats will come out for a bigger federal aid program for school construction. Southerners think they have a way of getting this through without running into a big fight over the segregation issue.

Watch for the Democrats for instance to go further than Eisenhower on public housing. The President wants 35,000 additional housing starts for the year beginning next July 1, what he asked for this year. Republicans gave him this, but with strings attached. Democrats will come out for a program closer to the 135,000 units per year called for in the 1949 act.

This kind of competition between Democrats in Congress and Eisenhower could result in delaying some expansion programs but there will be no cutbacks, and some of the proposed bigger public works programs are bound to go through.

•

Foreign suppliers of hydroelectrical equipment—turbines and the like—are getting better breaks under the buy American act. Last week a British bidder on a two-turbine order for Table Rock Dam in Missouri was given the contract despite the fact that the American bid was only 11.8% higher than the British low bid. The law permits any government buyer to give the award to U. S. suppliers if they are within 25% of the low foreign bid.

This latest bid showed a narrower bid differential than any other in which the foreign firm was favored over the home company.

•

Building trades would like a federal construction labor law which would wrap up in one package all the legislation that now applies to them which includes the following: Taft-Hartley, Fair Labor Standards Act, Davis-Bacon and apprentice and work injury.

Idea would be to get construction unions out from under Taft-Hartley and get a special law that's tailored for the building trades, as the railroad workers have a law of their own.

Building trades officials are a long way from achieving this, and they know it doesn't stand much chance in Congress even if they're ready to push for it next year.

A change in the eight-hour rule will be sought by Secretary Mitchell to make it mandatory to pay time-and-a-half for hours over forty worked on government projects. The law now permits eight hours a day at straight time —even if you work six or seven days a week.

Announcing the LS-58...

today's fastest, most powerful ½-yard shovel-crane

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ATTENTION ALL SHOVEL-CRANE BUYERS: Before you buy a shovel-crane of *any* capacity for *any* application, be sure you check first with your Link-Belt Speeder Distributor. What you see here is *only one* of several great new, advanced Link-Belt Speeders — available NOW — and offering EXCLUSIVE advantages for you!

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BUILDERS OF A COMPLETE LINE OF CRAWLER, TRUCK AND WHEEL-MOUNTED SHOVEL-CRANES

Next year President Eisenhower must depend on cooperation from these Capitol Hill veterans who now are planning . . .

SPEAKER RAYBURN will be the dominant figure in the House.

MAJORITY LEADER JOHNSON will steer Senate Democrats.

Democratic Strategy in the New Congress

Construction has little to fear from a Democratic Congress. Democrats traditionally have been big spenders on public works, and there is little danger that they will try to hamstring these programs for the sake of politics.

The Democratic Congressional leaders—Speaker Sam Rayburn in the House and Majority Leader Lyndon Johnson in the Senate—believe there are political dividends that can be collected in 1956 by cooperating with the Eisenhower Administration on programs that the Democrats have supported in the past—foreign trade, health and welfare, foreign aid and public works.

Both Rayburn and Johnson are aware of the dangers of obstructing too much. They want to avoid giving the Republicans any excuse to accuse them of playing politics with legislation in the national interest.

Of course, there's sure to be a lot of pulling and hauling between the Republican Administration and the Democratic Congress during the next two years. Democrats will want to rely more heavily on the federal budget for financing projects. President Eisenhower will continue to seek state and local participation—his so-called partnership approach.

But all in all, the course being charted by the Democratic leaders will be one of moderation. Both Rayburn and Johnson are moderates, actually conservative on many domestic issues. And their moderation will be reflected in most of the men who will assume committee chairmanships. It's a safe bet that these men, particularly in the House, will take their cues from Speaker Rayburn.

• **Highways**—President Eisenhower's $50-billion highway program—expected to be one of the first major legislative recommendations he submits to Congress in January—will be turned over to committees to be chairmanned by men who are expected to look with favor on the program.

Senator Dennis Chavez of New Mexico, who will head the Senate Public Works Committee, and Representative Charles Buckley of New York, next chairman of the House Public Works Committee, both have championed big highway building programs.

They may seek to modify the President's recommendations. They may quibble over financing of the program, insisting on putting a bigger portion through the federal budget. But in the end what comes out will be pretty close to what a Republican Congress might have produced.

Chavez and Buckley also have records of strong support for rivers and harbors and flood control legislation. There will be no cutbacks here. But Congress put through a $1-billion omnibus bill in the last session, and there is little chance it will wrap up another package soon.

• **Power and reclamation**—Representative Clair Engle of California, who will be chairman of the House Interior Committee, is rated one of the best informed members of Congress in this field. He was an active supporter of the Central Valley and Trinity River projects, both of which lie in his district.

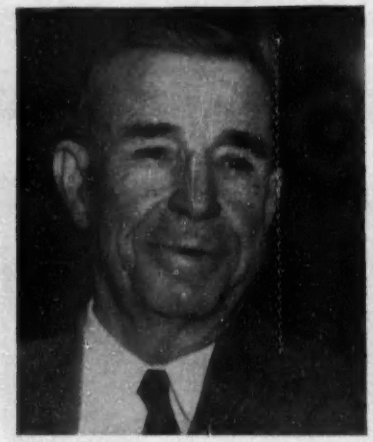
The big question is how much support he will lend the $1-billion Upper Colorado River project that failed to get through this year. The chances are that he will be slow in bringing the bill before his committee and will seek some sort of compromise to eliminate the more controversial features of the bill.

Senator James Murray of Montana will head the Senate Interior Committee. Murray campaigned for reelection this year with the promise that he will devote himself to reclamation and other western interests. That will likely mean trouble for the partnership concept of public works construction initiated by the Eisenhower Administration.

Both Murray and Engle look with

(*Continued on page 22*)

REP. ENGLE has a record as a reclamation booster.



SEN. CHAVEZ won't say "no" to the Eisenhower highway program.

REP. CANNON is the man who will hold the purse strings.

. . . Politics

considerable suspicion on the partnership idea. They prefer public works financing on the pattern established by the New and Fair Deals, and they can be expected to oppose new partnership projects.

• **School aid**—Prospects for broad federal aid for school construction suffered a setback in the elections. Because of the segregation angle, the Democrats who will head the committees that will handle this legislation are not as likely to push it as Republican chairmen would have been.

School aid won't get any help at all from Representative Graham Barden of North Carolina, chairman of the House Labor and Education Committee. And Senator Lister Hill of Alabama, chairman of the Senate Labor Committee, will be as handicapped as any other southerner in getting a bigger federal aid program.

Most other construction legislation has broad bipartisan support. Military construction, for example, always gets the green light from both sides of the aisles and can be expected to move along at a steady pace.

Housing, too, will move ahead. Representative Brent Spence of Kentucky and Senator J. W. Fulbright of Arkansas, who will head the House and Senate Banking Committees, both advocate continued strong federal participation in housing. They may plug, in addition, for an extension of the controversial public housing program.

Perhaps the most potent weapon the Democrats have at their disposal for taking political whacks at the Administration is control of the Appropriations Committees.

Democrats probably won't employ this weapon to any great extent against construction projects.

Voters OK $1.1 Billion in Public Works

Construction bond approvals establish record for November elections but will be dwarfed by new issues coming up

Bond issues totaling about $1.1 billion for state and municipal public works won voter acceptance at last Tuesday's General Election setting a new high for November elections.

However, Tuesday's results are only a partial indicator of the bond issues to finance public works that will be coming along next year. Special bond elections and revenue bond issues not requiring voter approval have made up an increasing proportion of municipal issues in recent years.

For instance, according to a compilation by the Wall Street investment house of Tucker, Anthony & Co., close to $1 billion of revenue bonds to finance construction are tentatively scheduled between now and Dec. 31. The same firm lists over $3.3 billion worth of revenue issues that could come up in 1955.

In addition to revenue issues, a huge volume of general-obligation bonds certainly will be sold next year by local governments to pay for highways, schools and other improvements. The total of revenue and general-obligation bonds may go well over the record $6.3 billion (mostly for construction) which Moody's Investors Service estimates will be sold in 1954. For 1955, ENR already has estimated a record $5.8-billion volume of contracts for state and municipal works, up 12% over estimated awards for this year (ENR Sept. 30, p. 19).

• **Last week's story**—The ballots and voting machines in last week's election listed proposed bond issues totaling $1.5 billion, of which over $1.3 billion appears to have won acceptance. In 1949, proposals totaled $1.6 million worth roughly the same volume getting the required majority vote. However, the November 1949 approvals included $500 million for veterans.

Of the $1.370 billion in bond issues approved in this election, special veterans benefits accounted for $255 million. California voters approved $175 million for veterans' farm and home loans; Michigan voters favored an $80-million bonus to their veterans of the Korean war. The remainder of the bond issue approvals were for public improvements.

Only two sizable bond issue proposals were turned down. Louisiana voters failed to give the necessary majority for a $50-million highway issue. A $25-million state dental-medical college was voted down in New Jersey.

Largest state bond issues were approved by New York and California voters. In the Empire State, voters supported a $350-million issue for mental hospital construction by a whopping five-to-one majority and also OK'd $200 million for public housing and slum clearance projects. In addition to voting $175 million for veterans loans, California voters overwhelmingly supported a $100-million school construction program.

A wide range of municipal improvements—streets, water, sewage, public buildings—won voter approval in several large cities. Philadelphia led the parade by voting two-to-one for bond issues totaling $54.6 million. Next came Baltimore, $44.8 million.

Plan New Rail Link

Santa Fe will call bids to build new connection off main line to Dallas

Bids will be received Nov. 29 by the Atchison, Topeka and Santa Fe Railway system for the construction of 49 mi of single-track railroad in Texas. It will give Dallas a direct connection with the Santa Fe's main line to Kansas City and Chicago.

Construction is expected to get under way by Dec. 10, according to T. A. Blair, chief engineer, and the new line is scheduled to be placed in operation by Dec. 20, 1955. Estimated construction cost is $6.5 million.

The new line will branch off the Santa Fe's main line about 5 mi south of Sanger, Tex. It will run southwesterly through Denton and Lewisville to a connection with the present Dallas-Paris line, about 10 mi northeast of Dallas. Streamliners and freight trains using the new 49-mi section will continue on into Dallas over this 10 mi of the Paris line.

Dallas has been served by the Santa Fe for nearly 70 years—but in a roundabout way. Freight traffic from the north has involved a circuitous route through Fort Worth and Cleburne, then back northward about 50 mi to Dallas.

One passenger train has operated daily over a connecting line between Fort Worth and Dallas. Other Dallas passengers now go by bus to and from Fort Worth. When the new 49-mi line is put into operation next year it will be used by the Texas Chief streamliners. In addition, the new facilities will provide Dallas with early morning freight service to and from the north.

A general contract will be awarded for grading, concrete work, drainage structures and structural steel erection. In line with its usual procedure, the Santa Fe will do the track work, including ballast, with its own forces. It also will do its own signal and communications work and purchase structural steel for the project under a separate contract.

Plans to provide Dallas with a more direct connection with its main line were first announced in July 1953, by Fred G. Gurley, President of the Santa Fe Railway system.

At that time an application was filed with the Interstate Commerce Commission, Washington, D. C., to build the new railroad on another location. This proposed route was on a line east of Lake Dallas passing 20 mi to the east of Denton.

Because of strong opposition by Denton, this location was disapproved by the Interstate Commerce Commission. On Aug. 6, however, the commission handed down a decision authorizing the Santa Fe Railway to build a direct line into Dallas on the condition that the new line pass through Denton. This resulted in the selection of the present route.

The new 49-mi line will be carried over about 70 reinforced concrete box culverts from 4x6 ft up to 11x11 ft. There also will be several highway grade separation structures.

Major quantities include: 3,300,000 cu yd of excavation and borrow; 13,000 cu yd of foundation excavation; 841,000 lb of reinforcing steel; 1,700 tons of structural steel; 38,000 lin ft of timber piling; 5,500 lin ft of corrugated metal pipe up to 66 in. dia; 510,000 lin ft of right-of-way fence, of which 155,000 ft is to be sheep-proof.

Soil Stabilization

Bureau of Public Roads, chemical firms join in search for new product

Joint government-industry research aimed at finding a cheap and broadly useful soil stabilizer is getting started (ENR Aug. 19, p.25), the program involves cooperative research agreements between the bureau of public roads and various chemical companies.

B.P.R. has signed formal agreements with American Cyanamid, Dow, du Pont's Grasselli Dept., and Westvaco Mineral Div. of Food Machinery; an informal agreement is in force with Rohm & Haas; agreements are about to be signed with General Aniline & Film, and with the Tropical Agricultural Research Laboratory of Southport, N. C. Four other companies may also get into the act.

The stabilization research will be strictly cooperative. The bureau will share its knowledge of soils and road building requirements; the companies, their knowledge of chemicals.

Since no money will be changing hands, the patent rights on any materials developed will belong solely to the companies.

Initial research work in testing chemical composition will be carried out by the bureau's laboratories at Gravelly Point, Va., near the Washington, D. C., National Airport.

Should some material that seems satisfactory be found, the bureau will arrange with some state highway department to build a section of experimental road for pilot-scale testing.

While bureau officials are hopeful that some material can be found, they are not expecting miracles. A new stabilizer must be cheap to find widespread use.

Engineers in Unions

Ohio Society wins round in fight against efforts to unionize engineers

The Ohio Society of Professional Engineers has won another round in its fight against unionization of engineers, but it is still bent on striking a knockout blow on the issue.

Latest bit of encouragement for the OSPE comes from an administrative ruling by the National Labor Relations Board's general counsel that a "chief of party" in a surveying crew is a supervisor under terms of the Taft-Hartley Act and thus not entitled to bring action under this law.

The ruling is in line with an earlier one by NLRB's regional director in Cleveland in the celebrated test case involving L. Stewart McCoy, a young engineer on the Ohio Turnpike (ENR July 22, p. 24). McCoy's complaint against the International Union of Operating Engineers, charging an attempt to force him to join the union, was dismissed by the regional director on the grounds that he was not an employe as defined by the act.

While the OSPE welcomes the two rulings in principle—for their recognition that engineers employed in supervisory capacities are part of management—it will continue to press for a decision by the full NLRB or by the state courts.

"The Ohio Society will continue to assist all those who want to be free of labor union affiliation," declared the OSPE's November issue of its publication, "The Ohio Engineer."

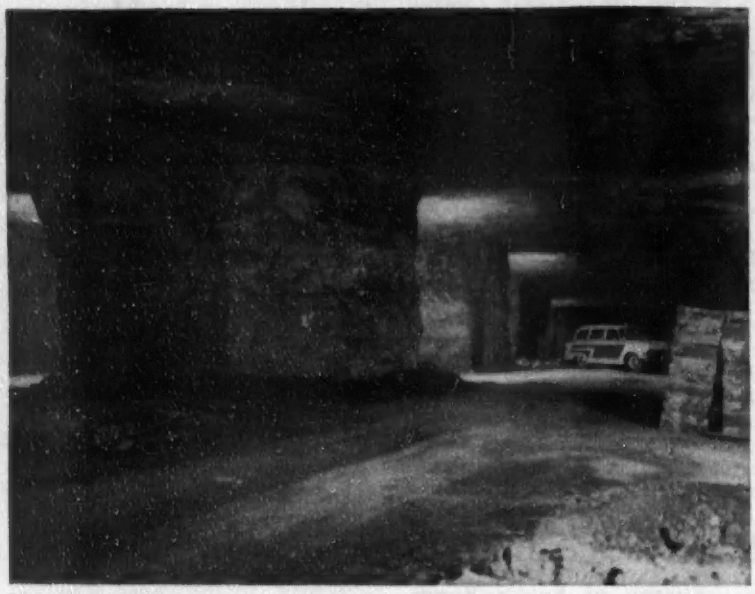
At a meeting of OSPE's Freedom of Association Committee last week, it was decided to withhold recommendation on the next course of action until members had more opportunity to make known their views as a result of the NLRB's general counsel's ruling.

Baltimore Tunnel Project Slated for March Bidding

The Maryland State Roads Commission is expected to call for initial bids for construction of the 1.7-mi, twin-tube Baltimore Harbor tunnel next March.

Total cost of the project, including 13.5 mi of approach highways, has now been set at $130 million as compared to earlier estimates of up to $144 million. Construction costs have been estimated at $97 million.

J. E. Griner Co., consulting engineers for the project, have set Dec. 1, 1957, target date for opening the facility, which is designed to break serious Baltimore traffic bottlenecks (ENR Aug. 13, 1953, p. 24).



UNDERGROUND SPACE of 2,000,000 sq ft in a forest of 30-ft-thick limestone pillars will be utilized for warehousing activities.

Old Limestone Mine to House Stockpile of Machine Tools

An abandoned limestone mine in western Pennsylvania will be converted into an underground warehouse with 2,000,000 sq ft of storage area for "mothballing" a part of the Air Force's pool of stand-by machine tools.

The 50-year-old mine, which has been out of production for a decade, is located five miles from the Pennsylvania Turnpike near New Castle and Beaver Falls. It ranks high on the list of exhausted or abandoned underground workings that have been cataloged by the government as suitable storage areas for defense stockpiling.

Bids for construction of the facility, estimated to cost around $5 million, are scheduled to be called soon by the Philadelphia District, Army Engineers. Engineering surveys have been completed by Michael Baker, Jr., Inc., Rochester, Pa., consulting engineers, who also were assigned the design.

• **Using half of open space**—Underground facilities, in addition to storage areas, will include a cafeteria, motor pool, automotive maintenance shop, carpenter shop, machine shop, paint shop and crating area. A number of outside servicing installations will be built, including a sewage treatment plant, boiler plant, electric power substation, dehumidification plant, water supply system and loading and unloading facilities. A mile of track will be laid from the nearby Pennsylvania Railroad right-of-way, and access roads will be constructed.

The 5,000-ft-long mine affords a total of 4,000,000 sq ft of storage space, but only half will be used for the warehouse. In this space are 1,121 limestone pillars, 30 ft thick and 16 ft high, which support the mine roof. Average open space between pillars is 30 ft.

For the most part, storage areas will be paved with 6-in.-thick concrete slabs. Administrative sections and shops will have concrete-block walls and suspended ceilings to cut down cost of heating the working areas.

Other construction work in the mine will include strengthening the portals with structural steel and concrete and extending the entrances beyond the face of the hill to prevent damage from slides or rock falls.

• **Special dehumidification**—Average dry-bulb temperature in the mine is 47 to 50F, with humidity a dank 85 to 90%. Keeping the air in the warehouse sufficiently dry for proper maintenance of the machine tool stockpile posed one of the most formidable problems in making the mine usable. But, the engineers solved it with a dehumidifying system caculated to keep the humidity between 40 and 45%.

Ducts will carry the dank air into two dehumidification units, each consisting of two sections and operating with a solid dessicant. One section will take in air while the other is gas-drying its dessicant. The engineers called for units capable of handling 60,000 cfm—four times the capacity of the largest standard units—for this project. And, it is understood the 60,000-cfm types are to go into mass production.

According to the designers, the mine's present dry-bulb temperature of 50F will be raised by dehumidification to 65F within three years.

• **The water problem**—Fortunately, the engineers see no leakage troubles ahead. Their studies show that the mine can virtually be kept water-free by controlling runoff on the hill above the mine, and that pumping and drainage can easily take care of what little water may get in.

The project is being handled for the Air Force by the Army Engineers under the direction of Philadelphia District Engineer, Col. Robert J. Fleming, who will be assisted by F. W. Kelly, chief of the design branch, and R. C. Vrooman, project engineer. Air Force officers assigned to the project are Col. Edward G. Gill, Col. N. D. Lesh and Maj. W. A. Schauwecker.

R. L. John, executive vice president of the Michael Baker firm, directed the consulting engineering work, with Joseph Mundo, chief design engineer, and Joseph F. Bontempo, associate architect.

Six-Acre Warehouse Will Be Prestressed and Precast

Boeing Airplane Co. has awarded a contract to Leavitt, Chandler & Co. of Kirkland, Wash., for construction of a materials-handling warehouse which will have prestressed concrete beams throughout.

The structure will cost $1.5 million and provide 290,000 sq ft of floor space. Parking space for employes will be provided on the roof of the one-story concrete building.

The warehouse will be 600x484 ft. Girders will be 44 ft long and beams 40 ft.

The concrete roof slab will be cast in place, affecting a T-beam arrangement. Columns and 2½x20-ft wall-panel sections will be precast.

Prestressing and precasting the beams brought a bid $50,000 lower than for cast-in-place, reinforced concrete members and is expected to result in a time saving of two months. Tendons will be high-strength steel bars.

Plans were prepared by Harmon, Pray and Detrich, architect-engineers, with Olsen and Kitchen as structural engineers.

Barge Terminals

Missouri River cities take stock of needs for dock modernization

More than 100 businessmen from 20 Missouri River cities met at Omaha last week to study the construction and operation of river barge terminals.

The meeting, a navigation seminar arranged by the Missouri River Division of the Mississippi Valley Assn., was prompted by the revival of commerce on the Missouri the past season. During the navigation year ending Nov. 1, more than 275,000 tons of cargo were transported by barge to set an all-time record.

Engineering specialists, barge operators and terminal warehouse officials emphasized that the freight savings of water transportation will be lost unless efficient terminal facilities are provided.

"Today's terminal must be a completely functional set up," said George T. Bechtold of St. Louis, who is terminal supervisor for the Federal Barge Lines.

The rule of thumb, he said, is that each dock crane should handle 300 tons of freight per eight-hour shift and that 100 ft of mooring bulkhead should be provided for each barge anticipated.

Brig. Gen. W. E. Potter, Chief, Missouri River Division, Army Engineers, said that the Missouri River channel project now is 82% complete from the mouth to Kansas City, 75% complete from Kansas City to Omaha and 30% complete from Omaha to Sioux City.

The Bureau of the Budget, he said, has agreed to the principle that work between Omaha and Sioux City should be on a continuing basis until it is completed. This will be a 10-year job costing around $60 million. Work on this reach was resumed this year for the first time since the start of World War II.

There is the possibility that the head of navigation for the nine-foot channel project may be extended from Sioux City to Yankton, S. D., General Potter said. Further extension upstream would necessitate the by-passing of the Missouri River dams and "I doubt if we will see that in our generation."

The status of terminal facility programs for five major Missouri River cities was given as follows:

- Kansas City has a $219,000 expansion of its existing terminal under way.
- Nebraska City recently constructed with private capital a molasses handling terminal.
- Omaha's Municipal Dock Board is conducting a survey of needs as a first step to enlarging a river terminal constructed in 1946.
- Council Bluffs' mayor recently named a study group to look into need for a terminal.
- Sioux City recently named a semi-autonomous dock board.

Embankment Is Completed On Big Rolled Earth Dam

The embarkment for Garrison Dam, the biggest rolled earth dam ever built, was completed Nov. 4. The dam is 200 ft high and stretches about 2 mi from bluff to bluff across the Missouri River's flood plain.

A part of the Missouri Basin development program, the dam has been under construction since 1946. It contains 70 million cu yd.

With the dam complete, the entire project now has reached about 60% completion. Five turbogenerators, each of which will turn out 80,000 kw, are being installed. First power will come on the line in the spring or early summer of next year. Spillway work also is at peak stage. Bids were opened Nov. 5 for stage two spillway work.

Garrison is the second of the Army Engineers' Missouri River dams now being built under the Pick-Sloan Plan to have its embankment completed.

The embankment of the Fort Randall Dam which is located at Pickstown, S. D., was finished about a month ago.

Reclamation Bureau Cuts 100 From Denver Staff

One hundred top-ranking engineers, designers and researchers in the Bureau of Reclamation's planning and engineering headquarters at Denver have been dismissed.

L. N. McClellan, Assistant Reclamation Commissioner and chief engineer for the bureau, said, "This reduction was necessitated by a cut in the Reclamation Bureau's budget voted by Congress last July."

McClellan said all of those to be discharged are in the higher Civil Service classifications and are experts in their fields.

He said most of them "can do much better, as far as salary is concerned, in private industry."

Failure of the 83rd Congress to approve either the Frying Pan-Arkansas diversion project or the Upper Colorado Basin project was blamed for the reduction.

Despite the cutback, the bureau's engineering officials at Denver will retain 1,200 employes.

Texas Turnpike

Ft. Worth-Dallas Project gets a higher price tag—bigger traffic estimate

Favorable reports on the proposed 30-mi toll highway between Dallas and Ft. Worth have cleared the way for a construction start next year.

The new feasibility, engineering, cost and financial surveys boosted the estimated cost of the project from $52 million to $58 million, plus interest on the bonds. But the final traffic report —also revised upward—estimates that revenue will be sufficient to pay off the bonds long before their final maturity.

Construction plan revisions accounted for increased costs. Changes include a wider roadway, 40 instead of 20 ft of parkway between roadways, a further extension into Ft. Worth, a wider right-of-way, and different approaches into Dallas.

It was estimated by the final studies that the turnpike would start business with 11,000,000 vehicle trips in 1957—the year the road is expected to be opened. This will bring in a revenue of $4.7 million, of which $3.2 million would be available for debt service.

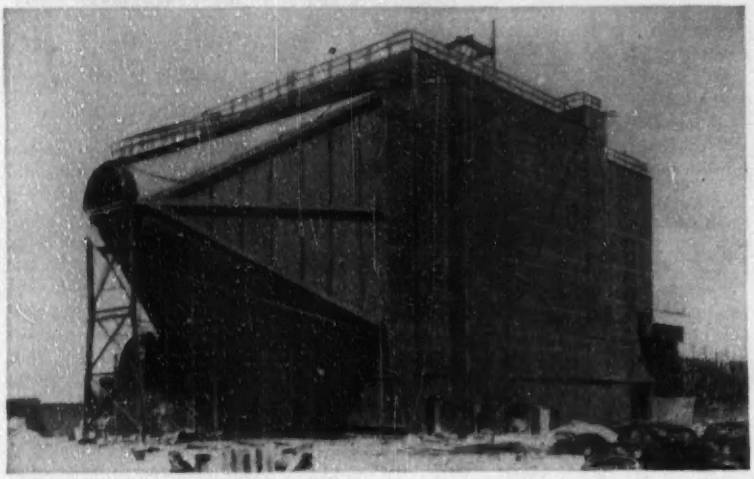
Basing traffic volume estimates on surveys made this year, the New York engineering firm of Coverdale & Colpitts figured that at the end of a 30-year period the road would attract an annual volume of 29,834,000 vehicle trips and at the same time would have earned $234.1 million.

Supreme Court to Decide Oregon Power Dispute

The Supreme Court will decide the dispute between the Federal Power Commission and the state of Oregon over licensing of a $22-million hydroelectric project on the Deschutes River. The court will decide whether permits from Oregon state agencies are necessary before FPC can grant a project license.

FPC issued a license to Portland General Electric Co. for construction and operation of the project, which includes a dam and power plant to be built on government-owned land and a regulating dam on private property some distance below the dam.

State wild life organizations joined Oregon's Attorney General in challenging FPC's jurisdiction to issue the license. Last February, the Ninth Circuit Court of Appeals held that federal ownership of the power dam site does not empower the U. S. government to the use of the waters contrary to Oregon state law. FPC's license was set aside.



Building Bulges to Take Intense Heat

Structure to house air dryer unit for new wind tunnel is capable of expanding when internal temperature rises.

A unique building that expands and contracts almost like a bellows has been constructed in Cleveland, Ohio, at the Lewis Flight Propulsion Laboratories of the National Advisory Committee for Aeronautics.

The structure houses the air dryer unit for a new wind tunnel capable of moving air at speeds up to 2,660 mph—the most powerful of its kind in the world. Air passes through the unit for purification and drying before it roars into the tunnel.

The building is 83 ft high, 133 ft long and 72 ft wide. It is enclosed by cellular steel panels manufactured by H. H. Robertson Co., Pittsburgh. Sealed vacuum tight, it will be subjected to a maximum interior temperature of 350 F.

When the interior temperature rises to near maximum, the radial distance between a stationary center column and each of the four corners of the building increases by about 1½ in.

Treated air from which dust, pollen and moisture is removed is essential to the accuracy of wind tunnel studies. To accomplish this, the air is passed over six beds of activated alumina, which remove moisture to a dew point of −40F. When the alumina becomes saturated, it is "roasted" under high temperatures to dry it out. This is the process that posed unusual problems for the builders of the structure.

The principal elements in their solution were these:

- The building has a centrally located expansion joint of buytl rubber, 8 in. wide.
- The entire base of the building is set in an air-tight buytl seal.
- The structure is supported by 25 steel columns, but only the center column is stationary. The base of the center column is anchored in concrete, but the other columns rest on steel plates that slide on graphite bronze.
- Fluting of the wall panels permits large expansion and contraction. The panels are 14-ga metallic-coated carbon steel. Sections were welded at the fabricating plant to keep field welding at a minimum.

Second Prestressed Bridge Underway in Tampa Bay

A second major prestressed concrete bridge is under way in Florida's Tampa Bay, following award of a $2.6 million contract to Harding Contracting Co., Columbus, Ga., for a trestle structure paralleling 2.6-mi Gandy Bridge between Tampa and St. Petersburg.

Except for one channel span, the two-lane crossing will consist entirely of 48-ft prestressed concrete stringer spans. These are the same length as the prestressed stringers in 3.3 mi of Sunshine Skyway, which was opened in September across the mouth of Tampa Bay (ENR Sept. 2, p. 30). The Hardaway firm, which built the prestressed portion of Sunshine Skyway, still has equipment in the bay area. The firm's bid for doubling Gandy Bridge was about $400,000 under the Florida State Road Department's cost estimate.

The new project will lie 80 ft north of the present two-lane crossing, which was built in 1924. Each will handle one-way traffic when construction is complete in 1956.

Jobs in the News

BREWERY—Gilbane Building Co., Providence, R. I., has been awarded a $24-million contract for construction of a brewery in Natick, Mass. All units of the new plant—being built for Carling Brewing Co. of Cleveland, Ohio—will have structural steel framing and be faced in brick and stone. Covering 32,642 sq ft, the project will include offices, brew house, and fermenting and aging cellar space.

BRIDGE—Virginia's State Highway Department has awarded two contracts for construction of the toll bridge over the Rappahannock River between Grey's Point and White Stone. One contract in the amount of $7.9 million went to Bethlehem Steel Co. for the superstructure; the other is for $4.8 million to Diamond Construction Co., Savannah, Ga., for the substructure.

HOSPITAL—Ring Construction Co., Minneapolis, Minn., has been awarded a contract by Corps of Engineers, Minneapolis, for construction of a hospital at Scott Air Force Base in Illinois. Estimated cost is $6.3 million.

INDUSTRIAL EXPANSION — Among industrial projects now in the planning stage are: a $15-million neoprene synthetic rubber plant at Montague, Mich., by E. I. du Pont de Nemours & Co., Wilmington, Del.; a $10-million expansion program for production of surface liner board at Charleston, S. C., by West Virginia Pulp & Paper Co., N. Y.; a $10-million dam and hydroelectric plant in Tennessee by Aluminum Company of America, Pittsburgh; a $15-million potash mine at Carlsbad, N. M., by Freeport Sulphur Co. and Pittsburgh Consolidation Coal Co., Consolidation Coal Co., Pittsburgh; and a $28-million petrochemical plant at Pensacola, Fla., by United Gas Corp., Shreveport, La.

ARMY INSTALLATION — Crow-Steers-Shepherd, New York, will construct a communications station for the Signal Corps at Asmara, Eritrea, East Africa. Estimated cost of the project—including post headquarters, barracks, infirmary, mess hall, warehouse and other buildings—is $8 million.

HOUSING—American Builders, Inc., Albuquerque, N. M., will construct by separate contracts a $30-million housing development at Colorado Springs, Colo. A shopping center, schools and parks will be included in the project.

CITY BY CITY

Central Artery Opened

Boston—The $33-million first section of the Boston Central Artery has been opened to the public and is carrying a surge of commuter-shopper traffic that soon may grow into a stream estimated to reach 40,000 vehicles per working day.

The initial project includes a one-mile section connecting Mystic River Bridge with Sumner Tunnel and a spur across the Boston and Maine Railroad's North Station lines.

Completion of this section furnishes the key for rapid development of all the other segments of the $110-million Central Artery program. The final link was given the green light early last spring (ENR April 22, p. 45).

There are three features of the new section:

- Heating coils have been installed in the five ramps from Causeway St. to Sumner Tunnel for ice and snow control.
- A "dry" water main for fire protection has been installed. It can be filled immediately with water when connected with fire apparatus at street level in the event of fire on the elevated roadway.
- Double curving on the outer edges of the roadway serves two purposes: (1) it safeguards against vehicles climbing over and crashing through the guard rail; (2) it provides an emergency catwalk for motorists, engineers and workmen.

Modern Living

New York City—The long-discussed conveyor-belt train to replace the subway shuttle between Times Square and Grand Central Station has finally been given the green light. Last week the city's Transit Authority awarded a $3.8-million contract to furnish and install cars and equipment.

The contract went to Passenger Belt Conveyors, Inc., of Akron, Ohio. The firm is a joint subsidiary of Goodyear Tire & Rubber Co., Akron, and Stephenson-Adamson Manufacturing Co., Aurora, Ill.

On Dec. 10, bids will be advertised for reconstruction of the shuttle's tunnel. This project is expected to cost another $1.1 million.

The new system, consisting of 130 ten-passenger cars constantly in motion, should be in operation within two years. Present shuttle service will continue during installation.

The shuttle conveyor belt, with its

(*Continued on page 28*)

...ANOTHER BRAND NEW

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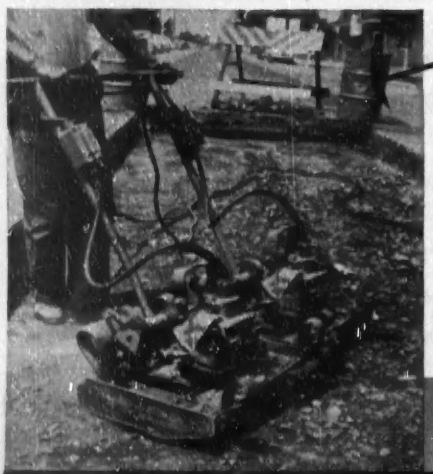
On jobs such as this, soil-bound macadam — 5 inches thick, the JACKSON MULTIPLE COMPACTOR, *now more powerful than ever*, achieves specified density in JUST ONE PASS. It is equally efficient on rock, or slag base and all other granular soils.

Quickly adaptable to widening, the JACKSON MULTIPLE COMPACTOR is shown here consolidating slag macadam base course 36 inches wide and 9 inches thick. Using three of the machine's powerful compactor units in tandem, it readily obtains specified density in ONE PASS.



Twin hook-up of manually guided JACKSON COMPACTORS consolidating gravel base for a large pavement repair area. These machines, used singly or in tandem, or side-by-side twin hook-ups, are exceedingly efficient for all types of granular soil base and fill compaction; also for bituminous patching and driveway construction. Operated from a trailer-mounted JACKSON POWER PLANT which may also be used for other power tools and lights.

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endless chain of little cars, will move along the platform at 1½ mph to permit passengers to step on and off. After the cars leave the station they will speed up to 15 mph, then slow down on arriving at the other terminus. Passengers will make the trip in two minutes. Present shuttle trip: two minutes plus waiting time (ENR June 3, 1954, p. 26).

Storm Warning

Oakland—One of the world's biggest diesel-powered, fully automatic storm-water pumping stations has gone into service at Oakland. The $750,000 plant, recently dedicated, is part of a $4.6-million construction program that is planned to provide adequate drainage for the city's low-lying industrial district.

Designed on the basis of a 15-year storm cycle, the plant can handle 650 mgd. Its four 1,200-hp diesel engines drive four 66-in. axial-flow pumps—the largest ever manufactured. Each 113,000-gpm pump contains a butterfly valve that opens and closes automatically during periods of normal operation.

The entire plant is controlled automatically by changes in the water level in the sump. As water flows into the station through reinforced concrete interceptor lines, two 20-in., 10,000-gpm motor-driven pumps are actuated to handle flows up to 22 cfs each. When demand rises, the first diesel goes into operation, tipping up as necessary. When this engine is at capacity and demand continues, the second, third and then the fourth engines go into operation. As demand diminishes, the engines idle and finally come to a stop.

End of an Experiment

Seattle—Three months ago Seattle installed 72 unit ventilators in its $2.2-million Battery Street Tunnel—but kept men on duty 24 hr a day as a precautionary measure. Now, satisfied with results, the city has decided to rely on the automatic detection devices to remove the accumulated carbon monoxide fumes between 7 pm and 7 am.

The unit blowers—put in for $130,000—cut tunnel costs by $600,000. The system consists of axial-type supply fans, each with its own intake chamber, spaced 58 ft apart on both sides of the 2,134-ft-long roadway (ENR May 7, 1953, p. 43).

The tunnel, built so traffic could skirt the city's business district, now handles some 2,500 vehicles an hour

during the evening rush. Stop lights on Auroa Ave. sometimes back up traffic the entire length of the tunnel. But this situation is expected to be alleviated by proposed construction of underpasses.

Progress Toward Power

Tacoma, Wash.—If plans and specifications are completed on schedule, Tacoma will call for February bids on construction of Mayfield Dam. Site of the 185-ft-high structure is a steep gorge on the Cowlitz River.

The dam is the first of two included in a $146-million hydroelectric project designed to generate 460,000 kw (ENR Nov. 26, 1953, p. 46). Mossyrock Dam, 325 ft high, will be erected later.

Long-Range Viewpoint

Greensboro, N. C.—To prevent recurrence of its recent critical drought, Greensboro has authorized a survey to outline needs and costs for a long-range water storage, water filtration and sewage disposal plan.

The plan—expected to cost $16.5 million—would set up extensive storage facilities within the city to handle an anticipated increase of water use from the present 10 mgd to 40 mgd. During the 40-day drought this summer and fall (the worst in 15 years) the city water supply in Lake Brandt dwindled from 850,000,000 gal to 300,000,000 gal (ENR Oct. 28, p. 22).

Expressway Under Way

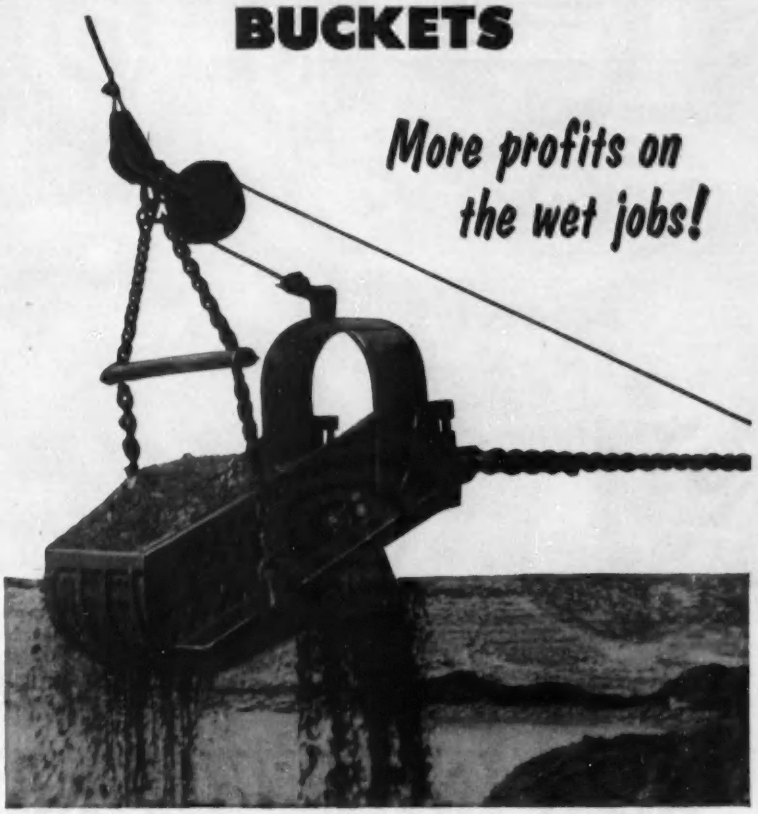
Winston-Salem—Highway officials have awarded a $2.6-million contract for construction of the initial link in Winston-Salem's east-west expressway—the first project of its type in the state.

The contract reportedly is the largest single one ever awarded by the state's highway commission. It calls for 1.6 mi of grading and structural work, including a long viaduct, exit and entrance ramps, overpasses and underpasses. Two North Carolina firms—Sanford Construction Co. of Sanford and J. K. Cecil & Sons of Lexington—won on a joint bid.

This first expressway link, expected to be a two-year project, will extend from Cloverdale Ave. to South Main St.

The expressway itself will be built in four sections and eventually stretch all the way across the city to connect U. S. Highway 158 on the west with U. S. Highways 158 and 421 on the east.

WELLMAN-WILLIAMS
PERFORATED DRAGLINE BUCKETS



THE Wellman-Williams Perforated Dragline Buckets have welded stiffeners the full length of the bucket for maximum strength and rigidity. Alloy steel construction gives maximum strength with minimum dead weight. Teeth are made of manganese steel and are reversible.

Hitch connections can be easily adjusted to any desired digging depth. Gives the operator a wide digging range for faster work.

Solid plate type dragline buckets also available.

It's a WELLMAN — built to dig and last while digging.

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NO TIME FOR DOWNTIME. Until this reservoir is completed, residents of Olathe will be paying premium rates for drinking water. That's why Contractor Lee Yerington says: *"On this dam I need plenty of power with a very minimum of downtime, and that's exactly what I get with my* INTERNATIONALS. *Take that TD-24 pusher, for example. 3500 hours on the meter and it still has original rails and never has had a major overhaul."*

"I needed durability ...my INTERNATIONALS delivered"

Contractor solves water shortage for Olathe, Kansas, with fleet of six INTERNATIONAL crawlers that never faltered in building a big dam and 160-acre reservoir

Water exporting business in Kansas City, Missouri, is due for a sharp slump due to the loss of 5,593 cash customers, the residents of Olathe, Kansas.

For many months past the thirsty population of Olathe has been supplementing the city's inadequate water supply by buying water by the tank car from Kansas City, but this condition is being rectified, and in a hurry.

The Yerington Construction Company, Parksville,

A TRAP FOR CEDAR CREEK is shown taking shape as the INTERNATIONAL TD-24 and B-170A scraper begins another loading cycle in the bottom of the new reservoir.

SOME BIG REASONS WHY earthmoving on this 450,000-cubic yard project moved at such a lively pace are apparent in this photograph: TD-24 speed that hauls heaped loads to the dam site at fastest traveling speeds. The positive rolling ejection feature of the INTERNATIONAL B-170A scraper spreads faster and completely cleans the bowl in the process.

Missouri, started construction of a new dam and 160 acre reservoir 2½ miles west of Olathe, and early in 1955 the city expects to be out of the water importing business.

Lee Dell Yerington is using a total of 21 pieces of equipment including 6 INTERNATIONAL tractors and scrapers to move 450,000 cubic yards of dirt and 60,000 cubic yards of rock on this hurry-up project, and here's what he says about his earthmovers:

"I like my INTERNATIONAL *equipment better than any other I have on this job—and for several reasons. I need plenty of power and plenty of durability and my IH crawlers deliver."*

Discover for yourself what this contractor has learned about how INTERNATIONAL crawlers and equipment deliver outstanding power and performance when the chips are down. Just call your INTERNATIONAL Industrial Power Distributor for your demonstration today. He'll bring the IH equipment you need to your job site anytime so you can get the lowdown on the IH rigs that mean more profitable business for you from here on in.

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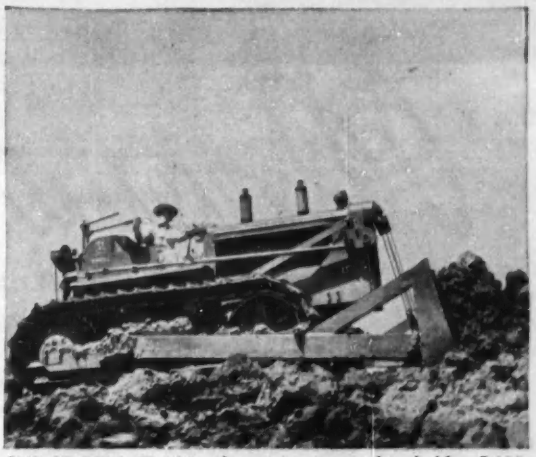

ONE OF FOUR TD-18As the contractor used to hold a 7,000-cubic yard daily production average on this job is shown dozing dirt for a small temporary reservoir. This structure will be used in conjunction with the small natural lake as a reservoir until the new reservoir is completed.

UPGRADE WITH A HEAPED LOAD presents no problem for the Yerington's TD-24 with matched B-170A scraper hauling a solidly packed payload of 21 cubic yards.

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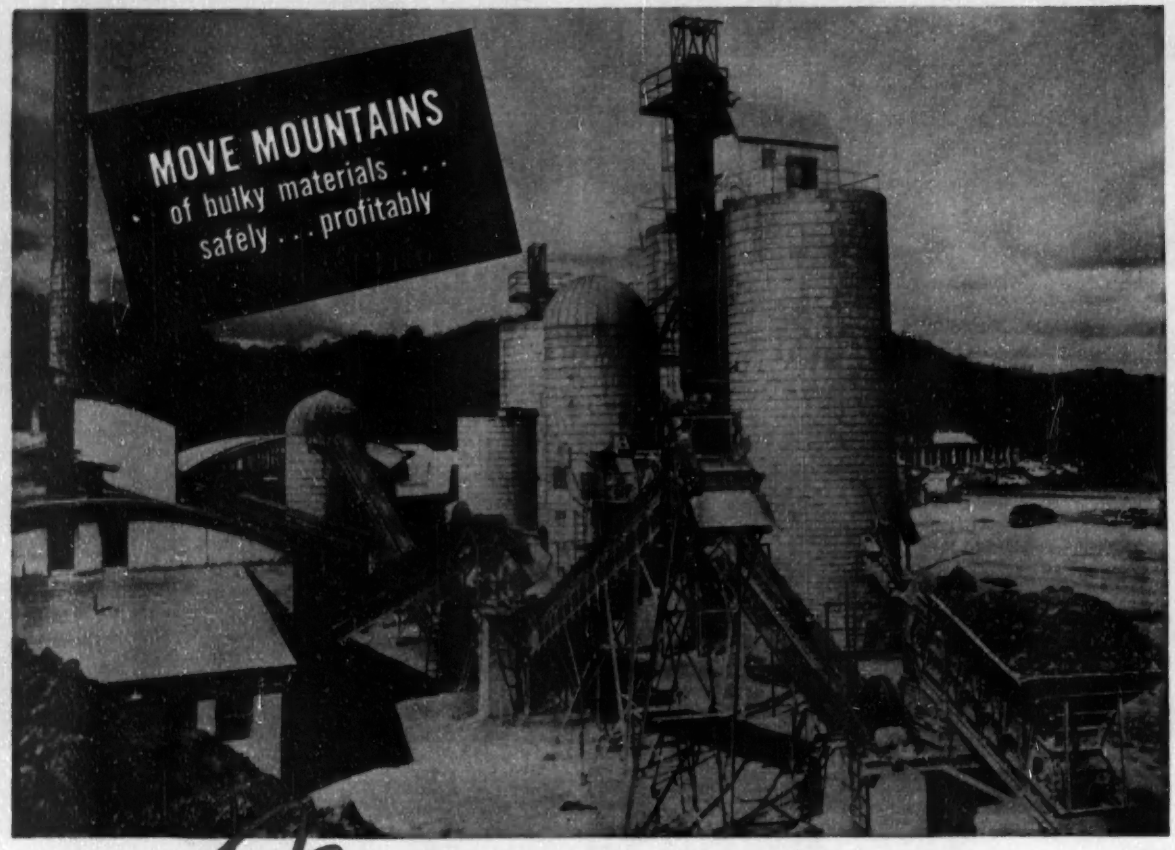

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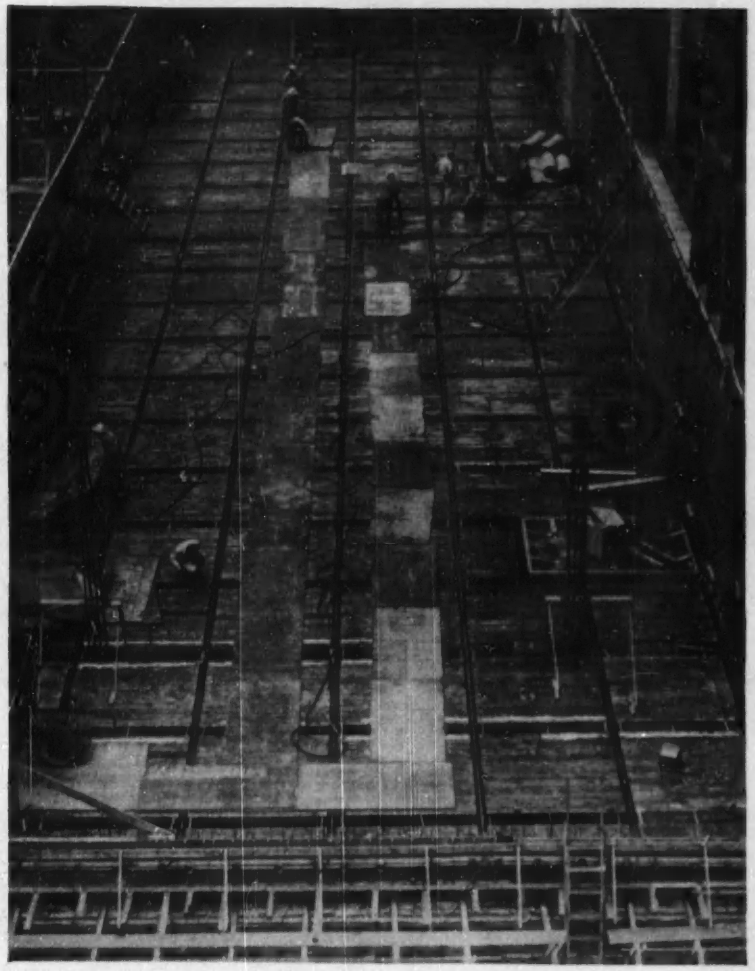


FLOOR SLAB 3½ in. thick in multistory building was prestressed with end-anchored cables. No conventional reinforcing is included.

Four Floors of Prestressed Concrete Placed in Los Angeles Office Building

Prestressed concrete beams and ribs provide the sole reinforcing for 3½-in.-thick concrete floor slabs in a 4½-story Los Angeles building that is now nearly complete. An addition to the Richfield Oil Corp. Building, it is the tallest prestressed concrete building yet constructed in the U. S. and the first such structure in Los Angeles.

Limited head room and desire for long-span construction led to the adoption of the unique prestressed design. There were some special problems to solve:

Entrance to the new structure and elevator service for it will be provided in the existing building. So floor levels in the two had to match.

The new unit has recessed light fixtures and is fully air conditioned, whereas the existing building is not.

To provide room for the fixtures and the air-conditioning ducts and still allow enough headroom in the limited vertical space available, the designers selected a prestressed floor system. They also had to use a high-velocity air-conditioning system, to reduce duct size.

The 46x170-ft building occupies virtually every inch of the available property. It has four full stories and a half-story penthouse for equipment.

• **No reinforcing**—The floor slabs are 3½-in. thick and have no reinforcing except that provided by prestressing cables. Longitudinal ribs (5½x8¾ in.), spaced 7½ ft c-c, run the full 170-ft length of the building. Each rib is reinforced with one steel tendon consisting of twelve 0.197-in. dia wires.

In the transverse direction, 11½x24-in. prestressed concrete beams are spaced 8 ft c-c, to span the 44½-ft width. Six 12-wire tendons prestress these beams. At the fourth floor level, a particularly tight headroom situation necessitated resizing the beams to 13½x20 in. and post-tensioning each with 8 cables. These tendons are placed on a parabolic vertical curve, supported by spreaders—3¾ ft c-c.

Concrete for the prestressed floor system was specified as 5,000 psi at 28 days, and no stressing was permitted until test cylinders reached this strength. Since each floor system had to be free to shorten with application of the prestressing force, each floor was concreted and stressed before its supporting wall was cast.

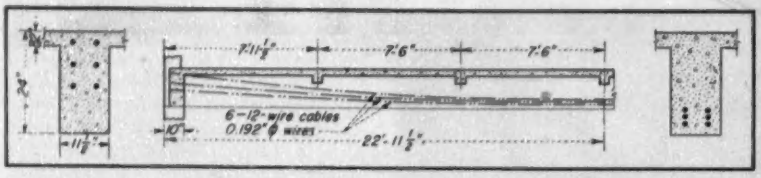
The longitudinal ribs were prestressed first, stressing being done from both ends simultaneously. Tendons for the beams, however, could only be tensioned from one end, because the opposite end of the beams abutted against the existing structure. These units were stressed according to a predetermined pattern to develop near uniformity in concrete stress.

The Freyssinet method of prestressing was used. Cables were delivered in 1¼-in. dia flexible metal sheathing. Anchorage and wedge elements were concrete. Cable assemblies were grout-filled after prestressing.

Prestressing wire had a minimum ultimate strength of 240,000 psi. The wire was stressed to 145,000 psi in the tensioning operation.

(*Continued on page 34*)

PRESTRESSING of beams was accomplished from one side only because one wall abuts an existing structure.



TYPICAL BEAM DETAIL shows parabolic arrangement of prestressing tendons.

. . . Four floors of prestressed concrete

(*Continued from page 33*)

This produced an upward deflection of the beams that caused them to spring clear of the forms making form removal an easy operation.

The flat-slab floors are used as diaphragms to transmit lateral loads to 10-in. thick exterior walls that comprise the sole vertical supporting elements. These exterior walls serve as shear walls for lateral force resistance. A prestressing cable was added around the periphery of each diaphragm to take tensile flange stress.

To provide better private office space, a structural enclosure was omitted at the front. Accordingly, two vertical cantilever wall elements were placed 20 ft back from the front wall for transverse shear purposes.

• **Architectural treatment**—The existing Richfield Building, which was erected in 1929, has a black and gold terra cotta finish, with a strong vertical accent. The new unit has precast facing slabs with large quartz and marble aggregate dominating the main facade. Terra cotta at street level ties the new structure with the old.

The interior finish of the addition includes removable continuous acoustical-tile ceilings and floor coverings of vinyl plastic tile, which extends under partitions. Light fixtures and air grills are movable. Thus, when partitions must be moved, no change in ceiling or floor covering need be made, except to replace damaged units.

Partitions are double-board type dry-wall gypsum, with the first layer clipped to metal studs and the second laminated to the base course with cement. Partition finish includes taped joints, texturing cement and stipple-finish paints. Designers claim good economy for such a high degree of flexibility. "Privilege" of repainting every four or five years for color changes was a factor in selecting dry wall partitions over steel enamel.

• **Air conditioning**—Due to inadequate headroom to permit conventional velocity air ducts, a high-velocity system was employed. Hot and cold ducts to each room allow individual temperature adjustment. Flexibility for future changes is assured by confining high-velocity distribution mains to corridor areas. Low pressure or conventional-velocity air duct take-offs are provided on an 8-ft module. Hot water is used as the heating medium and chilled water as the cooling medium. All air-conditioning equipment is located in a half story that was constructed on the roof of the new unit and that is large enough to house air-conditioning equipment for the parent structure.

• **Credits**—The Richfield Oil Building addition was designed by the office of Albert C. Martin & Associates, architects and engineers of Los Angeles. Contractor on the $1 million job is Guy F. Atkinson Co. Field supervision of prestressing was exercised by the Freyssinet Co. Prestressing units were furnished by the Intercontinental Equipment Co., of New York City.

This was the first Los Angeles building of prestressed design to be issued a building permit. For this reason it was necessary to present to the building department a research report that outlined proposed design criteria. Precedent established by the Richfield Building may well pave the way for further work of this sort.

TENDONS for beams are anchored at walls. The cable along the wall (arrow) assures diaphragm action of floor slab for lateral-force resistance.

Cite Lock, Tunnel Jobs as 100% Safe

A tunnel at Niagara Falls and a navigation lock on the Mississippi have come up with perfect safety records—both rare accomplishments in construction so hazardous.

Credit goes to McCarthy Improvement Co., of Davenport, Iowa, and to Cabot Construction Co., Kingston, N. Y. The McCarthy firm was cited by the U. S. Corps of Engineers, Rock Island District, for finishing the first stage of a new, 1,200-ft lock on the Mississippi at Keokuk, Iowa, without a single lost-time accident. Meanwhile, at New York, Liberty Mutual Insurance Co., Boston, presented a plaque to the Cabot firm for its accident-free record. Cabot's job was driving 1,940 ft of rock tunnel for a service water system at the riverside plant of Electro Metallurgical Co., Niagara Falls, N. Y.

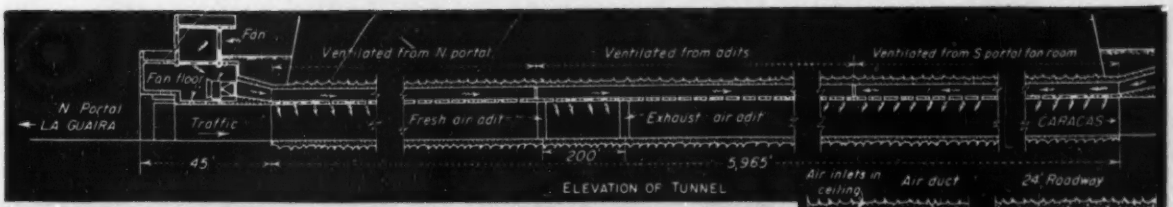
The navigation rock project was directed by Thomas P. McCarthy, of McCarthy Improvement Co. His crews worked 200,000 safe man-hours during a year and a half. Features of the $1,600,000 contract were a cofferdam 1,200 ft long, 974 ft of guide wall and three mooring piers.

According to records in the Upper Mississippi Valley Division, Corps of Engineers, this is the first navigation project of its kind that has been without a lost-time accident.

Cabot's record also is unusual. Arthur Gordon, assistant chief engineer of Liberty Mutual, stated that it is unlikely that there have been more than five tunnel projects of all types that have been completely safe. Under Superintendent John Foster, Cabot crews drove 1,495 ft of intake-outfall tunnel 11 ft wide and 8 ft wide; also 445 ft of 8-ft dia supply tunnel. The main tunnel is concreted with a wall down the middle to give two water ways 4 ft wide and 6 ft high. It connects an intake-outfall structure in Niagara River with a pumping well at the plant. Four headings were driven from two intermediate shafts, the entry to terminal-structure cofferdams being made by risers stopped in the tunnel roof.

In addition to the normal hazards of rock tunneling the contractor encountered many pockets of dangerous hydrogen sulfide gas. His first line of defense was an unusually large ventilation capacity—5,000 cfm in each heading. He also used gas detectors; when drilling or blasting broke into gas-bearing seams, the detectors gave warning and the seam was grouted off.

Tunneling and other rock excavation at Niagara Falls was done by Cabot under a subcontract with The Foundation Company, New York, prime contractor on an Electro Metallurgical Co. plant expansion.



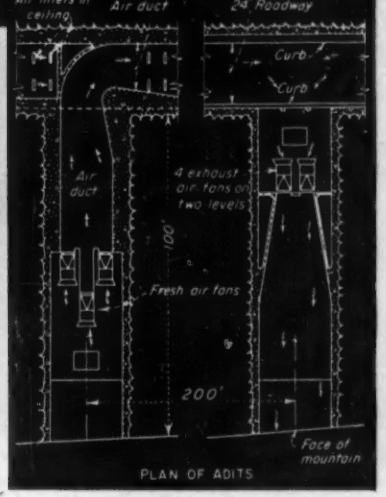


Diagram of Ventilating System Boqueron Tunnels

AIR FOR BOQUERON TUNNELS

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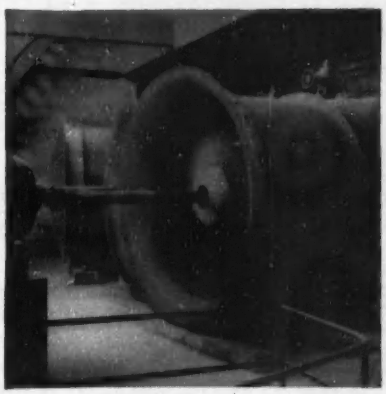

84" Joy Fan at Boqueron South Portal. Total available horsepower on job is 2115. Individual fan capacities range from 88,000 to 208,000 cfm at static pressures from .75" to 4.0".

VENEZUELA'S BOQUERON TUNNELS, on the Caracas-La Guaria expressway, use a vent system of 24 Joy Axivane fans . . . largest installation of its design in existence.

Shortest of the two twin-bore tubes (1634') is serviced by five 72" blowing fans above the North portal.

Venting the 6055' tunnel is more complex. Nine 72" and ten 84" fans are mounted above the portals and in two adits at quarter points (see diagram). Exhaust air is handled by four of the 84" units in one of the adits. Fan speed is automatically regulated by traffic conditions.

The Joy-designed drive arrangement eliminates power loss and maintenance. The 72" fans are powered by direct-connected, two-speed motors. The 84" units utilize wound-rotor and squirrel-cage motors mounted in tandem.

Joy Axivane Fans were selected because of their well-known high-capacity/low-power-consumption characteristics. Other contributing factors were the inherent structural strength and compactness of the vaneaxial design.

For complete information on Joy Series 1000 Axivane Fans, write for Bulletin J-611 to ***Joy Manufacturing Company, Oliver Building, Pittsburgh 22, Pa.*** In Canada: *Joy Manufacturing Company (Canada) Limited, Galt, Ontario.*

Consult a Joy Engineer

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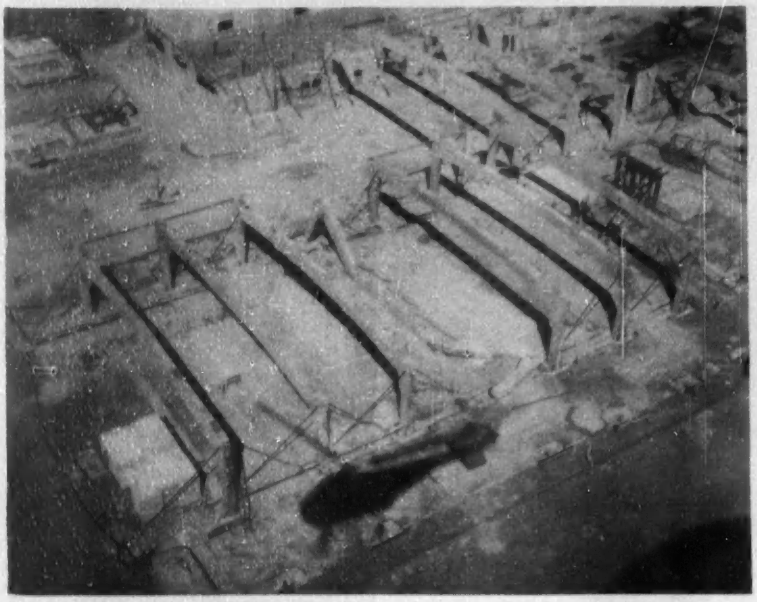


AIR VIEW SHOWS COLLAPSED BENT in relation to the rest of the structure. Failure occurred at night during a week-end lapse in construction after part of the roof slabs were placed. Roof panels previously on adjacent bents have been removed.

Failure of Concrete Rigid Frame Blamed on Reinforcing Details

Collapse of a precast concrete rigid frame bent during construction operations at a southern California naval base has been attributed to improper detailing of the reinforcing, according to data released by the Navy. Replacing the bents with units of a new design cost the Navy an additional $60,000 on the $807,000 contract.

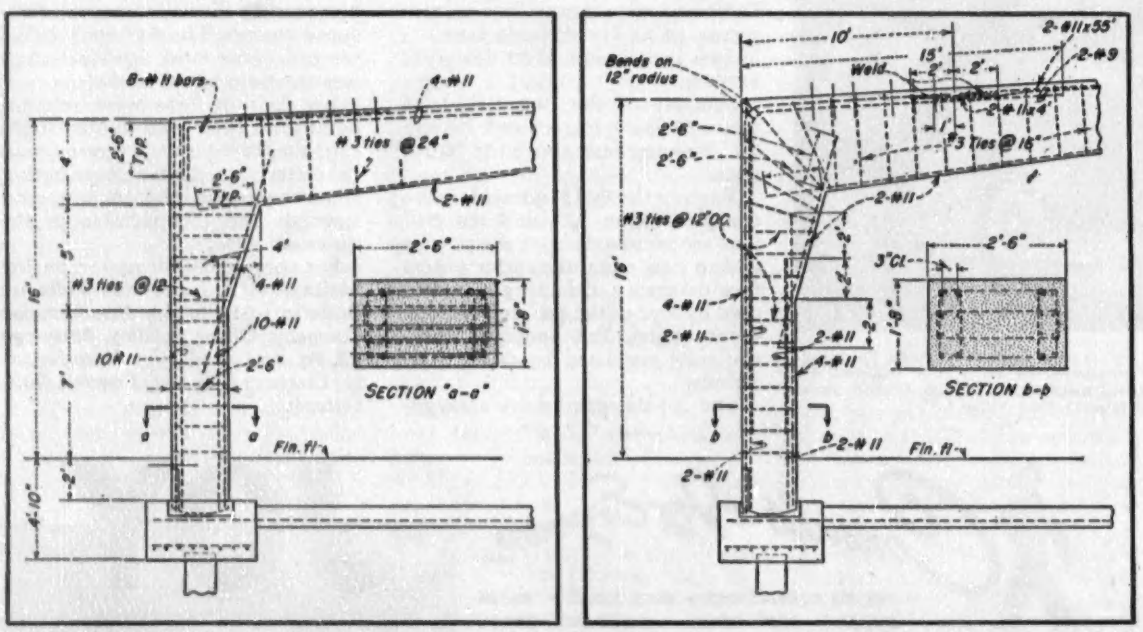
The failure occurred in a 3,300-man subsistence building (galley and messing facilities) designed by Albert C. Martin and Associates, Los Angeles, and being built by F. E. Young Construction Co., San Diego, at the Naval Amphibious Base, Coronado, Calif. The bent in question was part of the framing for the mess hall portion of the building that is about 70x316 ft in plan. Plans called for precast reinforced concrete bents with a clear span of 67½ ft to be placed on 20-ft centers. The bents are 18 ft high at the outside edge and provide 16-ft clearance at midspan. The 20-in. thick bents have 2½-ft wide legs and a 4-ft deep arch. The legs taper to 4-ft width just below the arch. Weight of each bent is 40 tons.

Contract for the work was awarded Aug. 6, 1953. Construction was well along when the failure occurred. On the evening of Feb. 5, 1954, most of the mess hall bents were erected and about one-third of the precast roof panels were in place. Suddenly and without warning, at about 10:30 pm on Saturday, Feb. 6, one of the bents collapsed. No eyewitness accounts of the failure are on record and there were no injuries.

Remedial measures were immediately taken to limit the possibility of danger to life while investigation for the cause of the failure was started.

An independent consulting engineer, Murray Erick Associates of Los Angeles, was asked to review the entire design with particular emphasis being given to the design of the precast reinforced concrete bents. The result of this study, together with Navy studies, indicated that the detailing of the original plans, plus the shop drawings of reinforcement placement, was

(Continued on page 38)



REINFORCING BARS were spliced at outer corners of original bents (left). Bars were made continuous at these corners of rebuilt bents (right). Replacing the bents cost $60,000 and delayed the work 120 days.

According to the architect, Mr. John Hans Graham, a reinforced concrete frame was selected for this new low-cost apartment building for three reasons: *Economy*—This flatplate type of construction proved less expensive than any other kind of structure. *Speed of Erection*—A complete slab was poured on this project every week. *Flexibility*—This construction allows complete freedom in locating intermediate partitions, pipes, ducts, etc.

These are only a few of the many advantages of reinforced concrete. It is inherently firesafe and highly resistant to shock. Materials are readily available from local stocks. On your next job . . . design for reinforced concrete.

"we used REINFORCED CONCRETE for economy, speed of erection, and flexibility"

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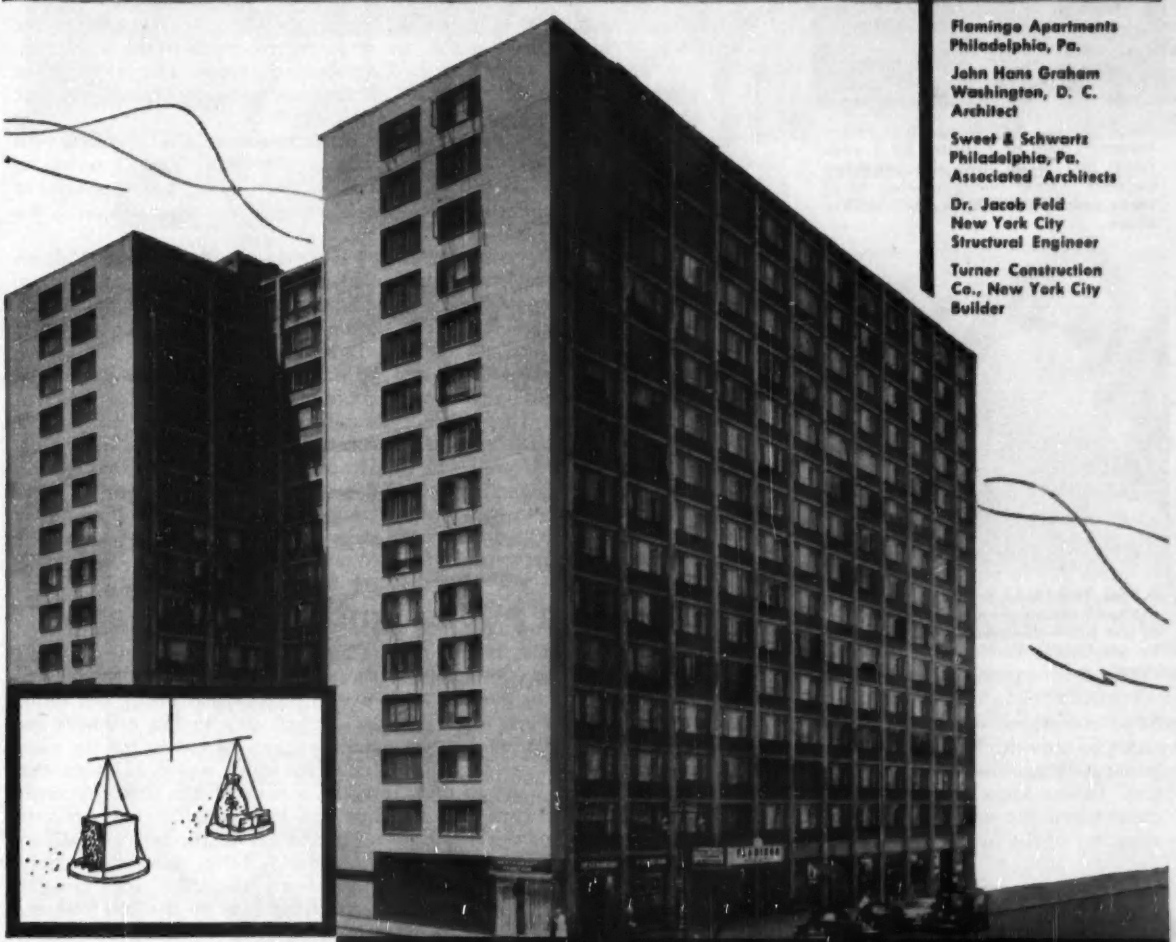
Philadelphia, Pa.

John Hans Graham
Washington, D. C.
Architect

Sweet & Schwartz
Philadelphia, Pa.
Associated Architects

Dr. Jacob Feld
New York City
Structural Engineer

Turner Construction Co., New York City
Builder



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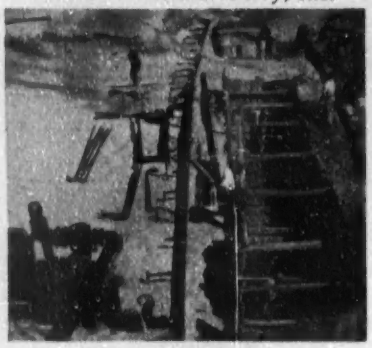

50 POINTS, 240-ft header: What volume could be handled by a well-point system of such size, working in very coarse water-bearing sand just a few ft from the ocean? Answer below.

3,960,000 GALS per day were pumped round-the-clock for the life of the job—this entire flow handled by one Griffin Vac-u-matic wellpoint pump.

SUCH exceptional drainage volume—it's 55 gals per minute for each point—will surprise many contractors. Others know from repeated experience the superiority and efficiency of the Griffin system.

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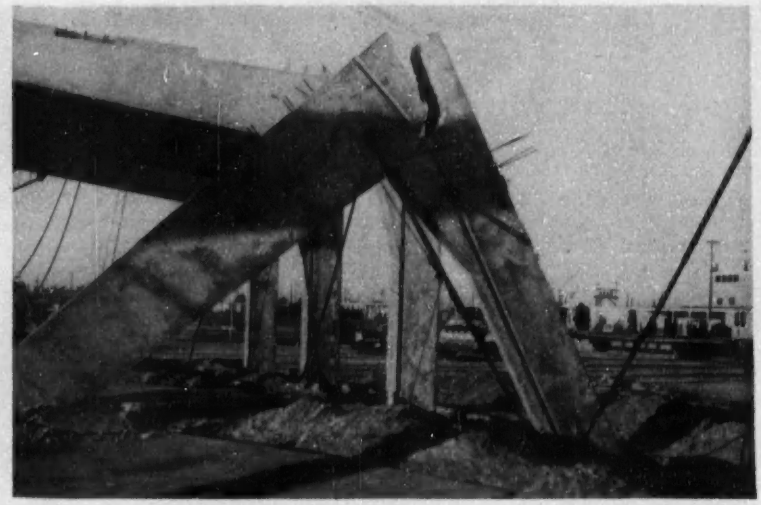

CLOSEUP OF COLLAPSED BENT shows failure surface. Although tension existed at this point an investigator reports there was no provision for reinforcement continuity.

such that an area of tension existed at the corners of the precast bents on a plane that was entirely unreinforced.

In an effort to reduce costs of shipping fabricated reinforcing bars, the design called for a splice at the corners of the bent in a region of maximum tension.

In redesigning the precast concrete rigid frames, reinforcing was extended continuously around the corner. All of the bents with the defective detail were recast. At the present time the structure is nearly complete after a 120-day delay.

The project is administered for the Navy's Bureau of Yards and Docks by Capt. K. A. Godwin, District Public Works Officer, Eleventh Naval District.

• **Designer's comment**—In commenting on the Navy's findings, J. Edward Martin—the engineer responsible for the original design—blames the failure on misinterpretation of the detailed engineering drawings. The intent of the design, according to Martin, was that the top reinforcing bars bending around the corner be intermeshed with vertical bars. Bar clearance notes, he contends, would not permit placement of the bars in any other fashion in the space allotted.

The Martin organization had no part in inspection of the construction. They reviewed shop drawings on reinforcing steel but did not inspect it in place in the forms.

Martin also defends the practice of continuity splices in the region of tension as being essential to economical construction even though hazardous. He cited, as a parallel example, the dowel condition at the base of a retaining wall as a position of maximum stress where a splice must be executed to preserve continuity.

Lake bottom heater ends ice problem

A huge electric water heater—big enough to heat water for 600 homes—is being installed on the bottom of Lake Ontario by Rochester (N. Y.) Gas & Electric Corp. Its job: to stop ice from forming on the intake screen of a pipe that supplies water to three of the utility's units at Russell Station.

The 7-ft concrete pipe—providing over 115 mgd of water to generate 190,000 kw of electricity—extends 3,600 ft out into the lake along the lake bed, 25 ft below the surface.

Last winter RG&E's condensing water came in from the lake at a slower rate than it was supposed to. An examination convinced engineers that the trouble was caused by ice.

After studying the situation, RG&E engineers came up with a solution: install enough heating elements in the screen at the base of the submerged pipe so that no ice can form.

The first step in the two-week installation process was to get the electric cable, which weighs 12½ tons, out to the mouth of the pipe. A small line tied to a metallic float was sent all the way from the pipe's intake to the station. Then, using successively larger lines, the cable was brought through the pipe to the lake bottom. The cable will carry 2,300 volts, feeding into a transformer that will be sunk at the end of the pipe.

After cable and transformer were in place, barges took the steel racks out and lowered them into position. Actual installation on the lake bed was done by a team of divers.

Western Hills Grade School, Omaha, Nebraska
Noel S. Wallace, *Architect*. Shelton and Sons, *Contractor*.

Truscon Intermediate Classroom Windows—

Light, Bright, Weathertight in New Omaha School

Many generations of students at Western Hills Grade School in Omaha are going to enjoy superior light and ventilation. Architect Noel S. Wallace specified Truscon Intermediate Classroom Windows throughout the well-daylighted building.

All types of Truscon Intermediate Steel Windows are products of the highest quality materials and workmanship. Specially rolled solid steel sections, substantial in weight and original in design, provide advantageous weathering and attractive appearance. Truscon Classroom Windows are fabricated to these same exacting specifications, Bonderized and painted. You can use them with complete confidence in your choice.

Upper lights may be glazed with one of several types of light-diffusing, glare-reducing, or heat-absorbing glass. Provision may be made for double-insulating glass up to 1" thick.

Classroom Windows are but one of the many types of Truscon Steel Windows currently being specified for school construction. Others are: Double-Hung Steel Windows with or without sill vents; Intermediate Projected Windows; Intermediate Combination Windows; Maxim-Air® Steel Windows; Donovan Awning and Truaire® Windows; Architectural Projected Windows. Ask your Truscon representative or see Sweet's File for more information or ideas.

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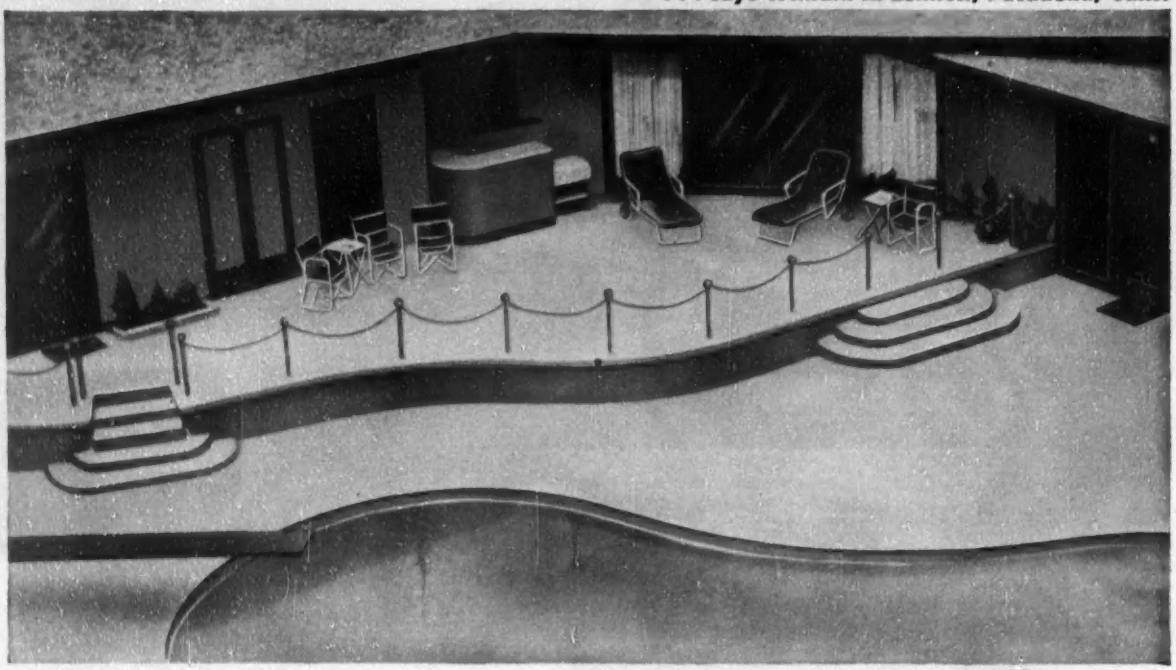
. . . says William R. Lennox, Pasadena, Calif.



WHILE building homes for others, Mr. Lennox found Clay Pipe Heating Ducts so practical that he incorporated them into his own new home—with an interesting added feature.

The same Clay Pipe Ducts are used for both heating and air conditioning. In cool weather, they carry warm air through the concrete floor slab to radiators, combining the advantages of radiant and forced warm-air heat. In hot weather, Mr. Lennox flicks a "Summer switch," which controls the blowers and injects a fine spray of cold water into the system. The water cools incoming air as much as 12°F., on the evaporation principle used in low-humidity areas.

There's no safe substitute for Clay Pipe in this type of year-'round service. Clay Pipe is dust-free and odorless when carrying forced warm air. Clay Pipe is rust-proof and corrosion-proof when carrying water-spray cooled air.

As a building material, you can't match Clay Pipe for easy, inexpensive installation. It doesn't float or squash out when concrete is poured over it, and standard fittings solve all installation problems. For heating and air conditioning ducts of job-tested quality, specify Vitrified Clay Pipe.

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C-154-2

Giant Loading Line Goes Down to Sea

An 11,500-ft oil line is placed in rocky, running seas on the Gold Coast

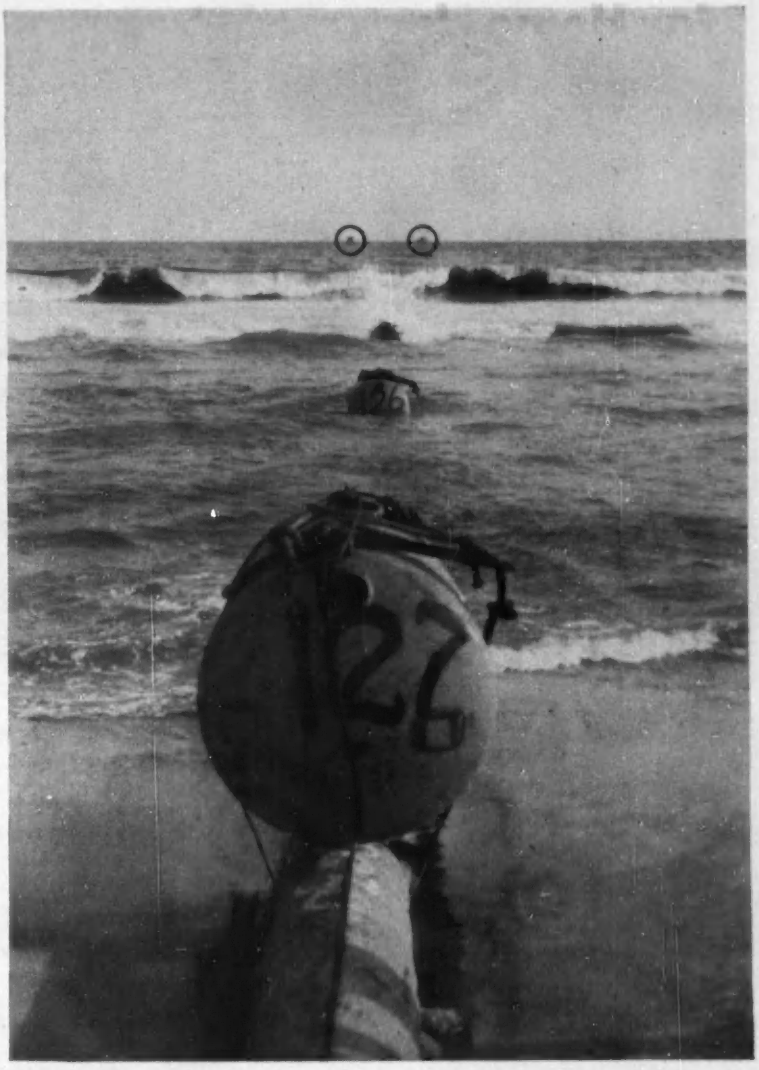
On the shallow but treacherous Gold Coast of West Africa, near Accra, the world's longest sea-loading oil pipeline was put down this year. What makes the job unusual is that the pipeline was launched along the sea bed—not floated out and then sunk into position.

With a useful life estimated at 40 years, the installation is the first submarine line to be laid off West Africa.

The coast is shallow and pocked with dangerous rock outcroppings. There is a one-knot current running parallel to the shore at this point along with a continuous heavy surf. Tankers, that had to anchor far out in the shallow Accra Roads can now easily discharge oil directly into the tank farm at Accra by just hooking up with the seaward end of the new line.

Construction and assembly of the 11,500-ft pipeline took only three months. Inside diameter of the pipe is 12 in. The exterior of the pipe has a protective coating of bituminous material to prevent corrosion, covered in turn with a 3-in. coat of air-placed concrete reinforced with wire mesh. The concrete provides a mechanical protection against damage, gives the pipe additional weight for greater stability, and protects the bituminous coating from marine growths. Because of the heavy pounding of the surf, the last 900 ft of line is coated with a thicker layer of concrete. Continuous cathodic protection is also supplied.

At the seaward end, the pipeline terminates in a 300-ft length of neoprene hose. Here there is a four-buoy anchorage for tankers and a marker buoy on the end of the neoprene hose that is fished up for bolting the hose to the ships' discharge pipes.



LIGHTENED BY BUOYS, the sea-loading pipe line was towed along the ocean floor by tugs (circled). Tugs could get no closer than a half-mile from the treacherous shore.

• **Towline troubles**—The shore at Accra is so shallow and rocky that it would have been dangerous for the two heavy tugs used for launching the pipe to approach any closer than 2,500 ft from the beach. As a consequence, the construction plan called for a very long towline to draw the pipe out to sea. A steel cable could not be used since the weight involved in a 2,500-ft length of cable heavy enough to take the pulling tension would have required too much power to drag it along the rocky bottom.

The solution to the towline problem lay in the use of a 3-in. dia manila hawser about a mile long especially made for the purpose. This hawser was loaded aboard a small tug and paid out to three surf boats and brought ashore—each boat paying out its section of rope as it went along. Native fishermen using a light messenger line hauled the hawser to the beach. This operation of bringing in the hawser had to be accomplished in a relatively short time in order to prevent waterlogging of the line which would greatly increase its weight.

At first the off-shore current carried the manila hawser on to a rocky reef about 1,000 ft from shore. Operations had to be suspended until a small tug, with very shallow draft, could be brought from the new port of Takoradi to steady the towing hawser as close inshore as possible.

• **Assembly line and X-rays**—Available and accessible land along the shore gave the contractors enough room for an assembly yard that could handle pipe lengths 1,400 ft long. Individual lengths of 40-ft pipe were welded together, to make eight of the long pipe strings. Each length of pipe received two spiral wrappings of glass fiber paper placed mechanically and set in a flood coat of hot tar. This wrapping was then carefully checked for any flaws, wrapped with wire mesh and coated with air-placed concrete.

Each weld in the pipe lengths was

(*Continued on page 42*)

MESSENGER LINE pulled ashore to bring in manila hawser used to tow pipe line to sea. Steel line would have been too heavy.

X-rayed with an irradiated cobalt slug. The cobalt slug obviated any possible electrical problems and reduced this check of the pipe to the greatest simplicity.

• **Pontoons to reduce submerged weight**—Since the weight of the pipe with its coatings was approximately 120 lb per ft, it would have been impractical to draw a weight, based on the length of pipe involved, out to sea by dragging it along the ocean floor. Instead, steel pontoons were strapped to the pipe at intervals such that the buoyancy of the pontoons reduced the underwater weight of the pipe to about 3 lb per ft of run. This arrangement still gave the pipe sufficient positive weight to stabilize it on the sea bed until the pontoons could be cut off. At the same time the line could be drawn to sea with comparatively little friction.

The pontoons, of which 230 were used, were made of ¼-in. steel plate and drum-shaped, 3 ft in dia and 5 ft long. Two separate 2-in. wide hoop iron straps, wrapped twice around the pontoon and the pipeline were fastened with two heavy clip fasteners. To avoid the necessity of sending divers down to release the pontoons after the pipe was launched, each pontoon was fitted with cutting devices through which the straps passed in fastening them to the pipe. A light wire running the entire length of pipe was then fastened to the cutting devices on each pontoon. After the pipe was finally in position the wire was reeled into a boat, thereby tripping the levers of the cutting devices and releasing the pontoons to the surface.

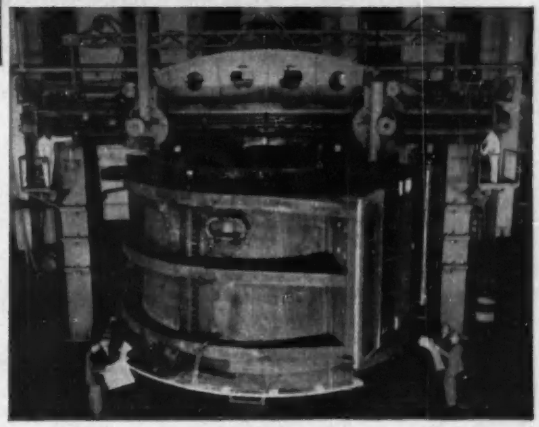
LAUNCHING CRADLES with pneumatic tire guides carry line from assembly yards across lagoon and sand reef to beach. Sand-filled timber cribs support cradles in lagoon.

• **Rubber tired cradles**—To eliminate as much friction as possible while hauling the pipeline out to sea, steel cradles on rockers, fitted with pneumatic tire rollers, supported the pipe as it moved toward the beach. Cradle frames were about 10 ft long, and at either end a set of three 24-in. dia tired wheels was fixed. These wheels were placed in an arc on roller bearings so that the weight of the pipe was taken on the center wheel and the two outside wheels acted as guides.

The rockers on which the frame was set permitted the cradles to compensate for irregularities in the ground

(*Continued on page 44*)

Rotor discs for mammoth 11-stage compressor were balanced and stacked for alignment in one of Newport News' five huge machine shops. Large engineering and technical staffs with a vast plant make Newport News an ideal source for large equipment . . . *standard or special in design.*



A 35-foot boring mill in Newport News' plant machining the 374,000-pound upstream housing for the giant axial flow compressor. The compressor is heart of an 8-foot supersonic wind tunnel at the Ames Aeronautical Laboratory of the National Advisory Committee for Aeronautics at Moffett Field, Calif.

To create winds exceeding

2000 MPH

Newport News builds world's Mightiest Compressor

Whenever you want large units built with careful attention to detail, give the job to Newport News.

This company recently built an eleven-stage axial flow compressor that shatters all previous records for wind force . . . using what is believed to be the world's largest rotating object.

The rotor, weighing more than 400 tons, comprises eleven huge discs. Each disc, machined from a 96,000-pound forging, was finished to a 50,000-pound wheel and balanced to within 26 ounces at the rim. In each rim, slots for blades were machined to within .005" on special milling heads designed and produced in the Newport News plant.

Here at Newport News, you'll find more than large productive capacity. In machine shops, foundries and forging plants Newport News craftsmen complete your orders with specialized techniques backed by experience in fabricating thousands of products.

Newport News' craftsmen produce units that range from small components of spinning machines, to mammoth hydraulic turbines . . . from piping, pumps and valves, to vacuum tanks, digesters and bridge caissons.

These skilled men handle the job exactly as you want it done, for maximum results per dollar invested. So let us bid on your present or future projects. Learn how Newport News can help you. Send for our illustrated booklet entitled, "Facilities and products" . . . it's your for the asking.

Newport News

Shipbuilding and Dry Dock Company

Newport News, Virginia

WELDING each 1,400-ft length of pipe to end of string lengthens line going out.

and in the covering of the pipe as it moved along to the beach.

Set at 60-ft centers along the pipe's path to the sea, the cradles started at the assembly yard and ran down to the beach. Each pipe length was fitted onto the cradle launching line in succession by three cranes operating simultaneously.

As the pipe was drawn out to sea by the tugs and when the end point of the most recently placed pipe length cleared the cradles in the assembly yard, the launching operation stopped and the next pipe length was placed on the cradles and welded to the end of the preceding one. This joint was then X-rayed, wrapped and given a concrete covering. This operation took three hours. Ideally, two strings of pipe could be launched daily, but it was not always possible due to the vagaries in the weather and in the tug operation.

• **Plenty of control**—Instant control of the pipeline's movement out to sea could not be adequately handled by radio orders to the two towing tugs since their forward motion and that of the towline could not be instantly stopped. To obtain instant control over launching operation, a 40-ton diesel-operated back haul winch was placed at the rear of the launching line of cradles in the assembly yard. Coupled to the rear of the pipe string by steel cable, the winch could counteract the movement of the tugs at any moment. A torsion dynamometer gave a reading on the amount of pull of the pipe at all times.

A control tower 20 ft above sea level and placed right at the beach over the pipeline maintained constant telephone communication with strategic points along the pipe and with the back haul winch. Tugs were hooked into this telephone system by short wave radio telephone so that every point in the far flung operation could be controlled from this one point.

• **A few more problems**—To determine the proper route for the pipeline through the underwater rocks and boulders off shore, the area off Accra was first combed with fathometer equipped boats. Then divers were sent down to check the route the fathometers had indicated most feasible.

The route finally picked involved crossing the lagoon previously mentioned. The beach between the sea and lagoon was only a strip of volcanic ash and sand and the assembly yard would have to be placed in back of the lagoon. But the lagoon proved more than a physical problem: it turned out that this body of water is sacred to Juju, a native religious rite. The high priest of Juju had to be convinced that the pipe launching would not compromise the sanctity of the lagoon before he, in turn, would propitiate the spirit of Juju to let the pipe snake across his domain. After lengthy negotiations and a ceremony conducted in the lagoon, the project was given the green light and work proceeded.

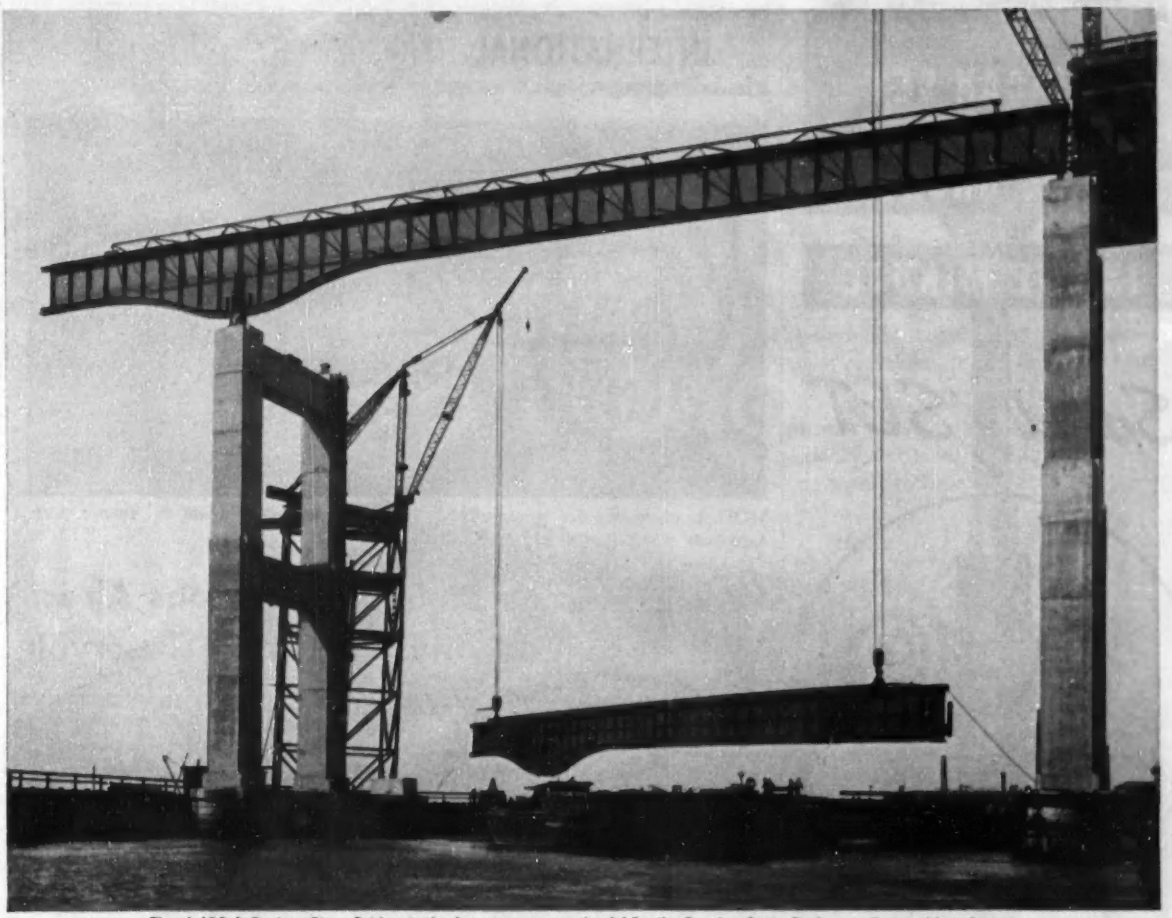
Timber cribs, supporting the launching cradles in the lagoon, measured 8 ft by 10 ft and were hand filled with sand, the natives forming a human chain to fill them.

Launching the pipeline further involved tunneling under one of the colony's main highways about 200 ft from the water's edge.

The pipe was successfully launched in ten days time, and as a measure of the accuracy of launching, the maximum divergence from theoretical alignment at any point in the extremely flexible line is no greater than 10 ft.

Submarine specialists on launching the line were the Collins Construction Co. of Port Lavaca, Texas; the general contractor was Taylor Woodrow, Ltd., of West Africa, and the owner of the pipeline is the Socony Vacuum Co., Ltd., of the Gold Coast.

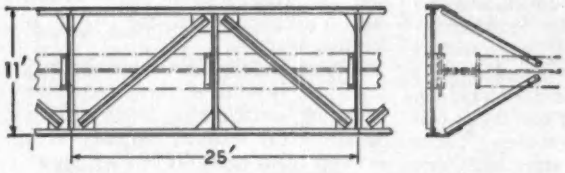
THREE CRANES lift each 1,400-ft pipe length in assembly yard onto rubber tired launching cradles to start trip to the sea. Note pipe's concrete protective surface.



The 4,400-ft Raritan River Bridge is the longest span on the 165-mile Garden State Parkway. Owner: New Jersey Highway Authority. *Design Engineer:* Dr. D. B. Steinman. *Steel Fabricator and Erector:* Bethlehem Steel Company.

How Bethlehem Prevented Lateral Buckling of Plate Girders for Raritan River Bridge

Lateral stability is a serious problem when you're erecting long, slender, heavy girders—and the ones shown here are exceptionally large. They are each 263 feet long and weigh 200 tons, making the buckling problem critical.



Our erection specialists completely overcame horizontal deflection by means of the ingenious stiffening trusses which appear in the picture and are detailed in the accompanying drawing. These trusses were used in erecting all girders where the factor of safety, lifting or landed, was computed to be below 1.7. This figure allows an ample margin of safety.

The stiffening trusses—in 25-foot-long units weighing only 1⅛ tons—were fabricated at our Pottstown, Pa., Works. On the job site these units (as many as nine for erecting the big girders shown in the picture) were spliced together and attached to the girders. All field connections for the temporary trusses were made with high-strength bolts having hardened washers under the heads and nuts, and torqued to a minimum tension of 25,600 lbs. Field holes were provided for connecting the truss clip angles to the girder flanges and the diagonal strut angles to the girder stiffeners.

In this way, despite the problems involved, Bethlehem was able to erect twelve big girders, varying from 219 feet long to the 263-footers described above, with complete success.

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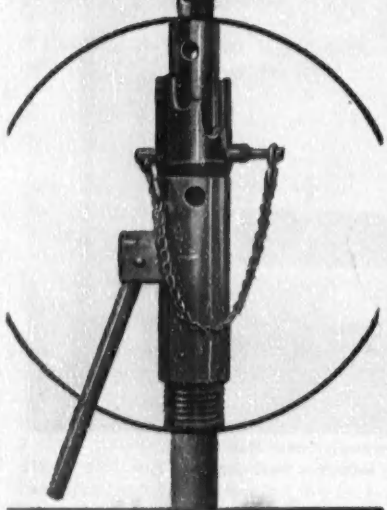
YOU CAN SET
THIS SHORE
IN ONE MINUTE

Speed SET



To Adjust
1. Lift upper staff, insert pin, and set on notch of Speedset that lifts head within 1½" of formwork.
2. Screw shore up final 1½" by turning built-in handle. Never more than six turns —usually less.
3. In sixty seconds or less— the shore is all set.

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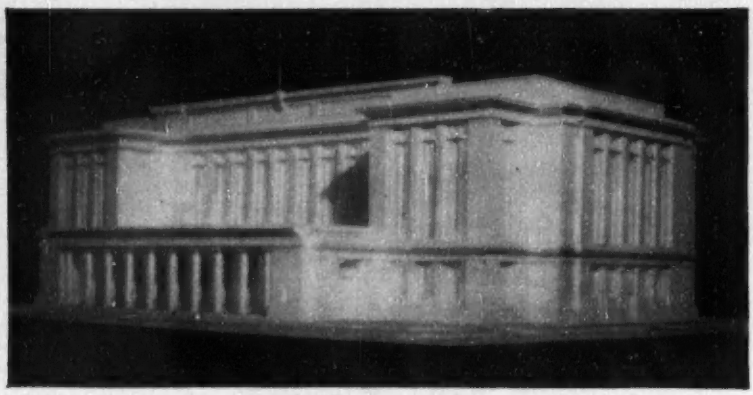


MODEL of new water storage building, now under construction in Buenos Aires, Argentina, shows its formidable and classic exterior.

Water Storage Building in Buenos Aires Will Resemble Anything but a Reservoir

One of the problems created by Buenos Aires' growing population is a water shortage. To meet this threat, the city is building what is reported to be the world's largest urban water storage building which oddly enough will look more like a museum of fine art.

When it is completed next June, the $1.7-million building will add 72,000 cu meters of storage to the water system. At present, three existing reservoirs located throughout the city store 192,000 cu meters and distribute more than 1½ million cu meters of water from the River Plata every 24 hours. To provide a still more uniform distribution, two additional storage building projects are being planned.

The new wholly reinforced concrete structure differs radically from the present all-metal ones. The most striking and immediate difference is that the exterior of the reservoir resembles a courthouse or a museum except that the upper stories have no windows. Water storage facilities behind this imposing exterior consist of six huge tank sections placed in pairs on each floor of a three-story building. Each tank on the first two floors will hold some 12,850 cu meters. Those on the third floor will store 10,300 cu meters each. Overflow levels (in respect to street level) are at a height of 52, 75 and 101 ft.

The tanks are separated from each other by expansion joints—and have perimeter aisles to separate them from the supporting structure and the facade walls. The foundation is divided into two sections, one for each of the two independent tank sections.

Both sections of the reservoir are built on a continuous foundation on which columns with inverted mushroom capitals rest. Columns are spaced 16 ft. apart.

Along the front of the building the pumping station houses inter-communication, drainage, overflow and distributing networks.

Pumps consist of six electric-powered deep-well turbines with combined horse power of 8,400.

Hydro Headaches

Snowy Mountains scheme has big problems ahead

Australia's $886.2-million Snowy Mountains hydro project is facing a series of major problems. Most of them stem from disagreements between the commonwealth government and the states of New South Wales and Victoria, where the work is located.

The commonwealth wants the two states to appoint it their agent for designing, constructing, financing and operating the scheme. Already—as a self-appointed agent—it has set up an authority, settled it on state territory, spent $84 million in project preliminaries and signed contracts worth $63 million more. But New South Wales and Victoria, which retain full sovereign rights over their own public works, have refused to ratify these contracts.

There are several other aspects of

(Continued on page 50)

2001
is exclusively a BUTLER NUMBER

It means a lot to you—2001 is the number of operations performed on an average-sized Butler steel building. There are actually 2001 precision operations done by Butler, including die formings, gang punching, miterings, weather sealings—that are not general steel building practice.

It means quick erection—Every piece is finished. No shearing, welding, shaping in the field. No nails, no gingerbread cover-ups.

It means sound buildings—No gaps, no joints to flash! Your building is as airtight and weatherproof as any conventional type.

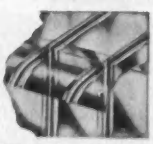
It means low cost—The saving in unnecessary metal alone is considerable. With every part completely finished, erection costs are low.

2001 is not a fancy phrase like "a thousand and one." It's real. It is what makes Butler steel buildings different—better—and most economical in the long run.

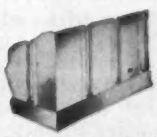
Extras like these make* BUTLER *steel buildings your best buy

Rigid frame gives you clear spans. No interior posts, every cubic foot of interior space is usable.

Bolts—all bolts! Nails or hooks won't do in Butler buildings. Nothing holds and seals like a bolt.



Mitering is done where sidewalls meet eaves . . . a Butler extra that assures permanent joints.



Weathersealed windows and base. Factory-sealed, they are flush at every point and rain-tight.

Die-formed roof-ridge panel seals the ridge, eliminates makeshift field flashing.

High-rib panels are die-formed, have great deflection strength—easier to seal, better looking.

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We tie truck axles in

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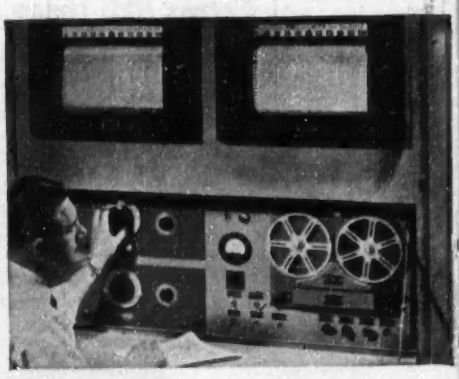
. . . and only Timken has it!

We smash, twist, jerk and over-load them. Match every imaginable hauling situation. Then add a few ruinous tricks of our own.

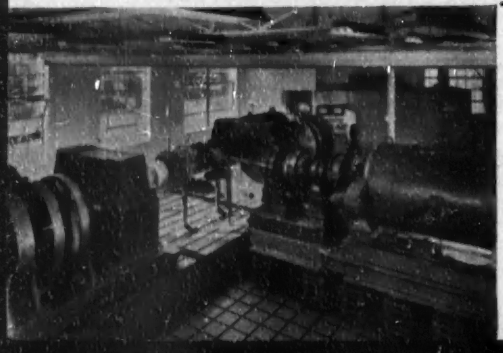
It's done on purpose. So we can tell you in advance that a Timken-Detroit axle can take a more brutal beating on the job it was designed for than any other axle made.

To prove it, we condensed a multi-thousand acre proving ground into one room. In it, our engineers can apply 50 years of experience in building axles for trucks, buses and trailers. Here axles and gearing are subjected *indoors* to any possible *outdoor* hauling condition. Axle performance is measured and analyzed under absolute scientific control!

As a result: you enjoy longer axle life; less maintenance, repairs and down-time; lower operating costs; fatter profits. No wonder Timken-Detroit axles are the choice of manufacturers and owners everywhere!

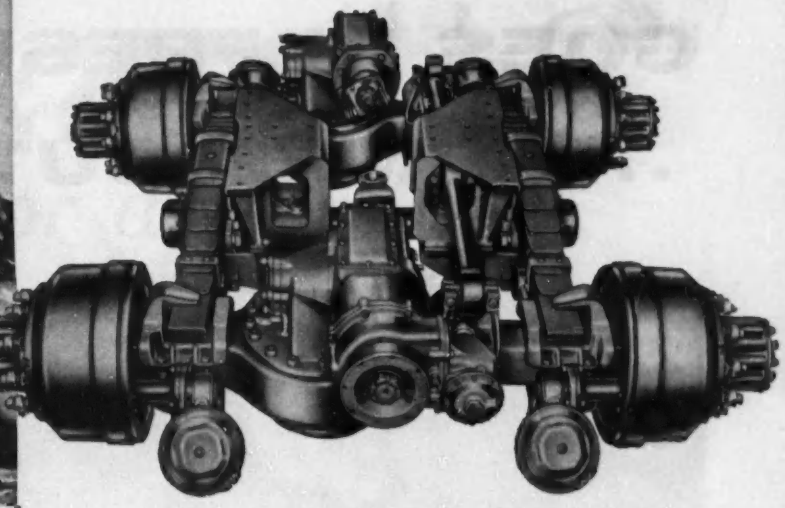


This is our "truck driver." He works in our "Torture Chamber." Above him are graphs showing speed and torque performance under any operating condition he chooses . . . soft ground at full load . . . mountains . . . express highways or side roads. With special dials, recorders and electronic devices, he actually *drives* the axle with scientific accuracy from his chair!



How TDA proves axle quality in this "Torture Chamber"

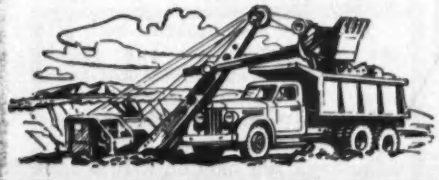
We pick one of our axles at random . . . then duplicate a hauling condition, hour after day after day . . . simulating half a million miles of the toughest driving situations in just a few days. Or "invent" a test like going uphill with a full load from California to New York non-stop. There is no other axle testing like it in the world!



THREE TYPES: Hypoid-helical double-reduction, optional inter-axle differential. Worm drive, without inter-axle differential.

Soft ground? Heavy load—all up-grade? That's a tremendous strain on an axle. But it's nothing compared to what we do in the indoor proving ground! For instance—we take an axle shaft and twist it 14° forward and backward, 36 times a minute, 24 hours a day, week after week. And that's only one test to give you low-cost performance, long axle life regardless of your hauling conditions.

knots



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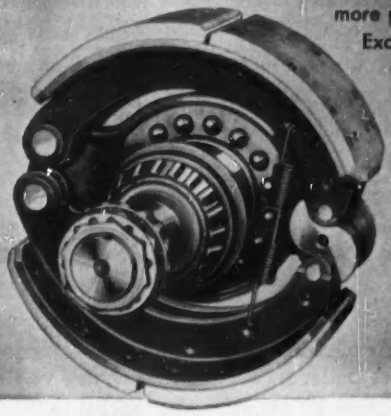
For six-wheelers . . . the TDA Tandem Drive Rear Axle Unit

Now—the *world's finest* tandem drive rear axle unit for heavy-duty motor trucks! And with these features, developed, introduced and pioneered by TDA: (1) Available in 3 types of final drives and 3 capacities. (2) Top-mounted straight-line final drive eliminates propeller shaft angularity. (3) Optional inter-axle differential . . . spur gear design, cab-controlled power-lockout. (4) Torsion flow axle shafts . . . guaranteed for 100,000 miles or three years, whichever occurs first. (5) Hot forged steel axle housing . . . guaranteed for the life of the vehicle. (6) Unit-mounted "P" series power brakes . . . for longer life, greater economy and efficiency. (7) Cradle ride spring suspension and paralleled torque rod system . . . maintain correct alignment and weight distribution regardless of driving and braking conditions. (8) Exclusive two-piece trunnion tube bracket speeds servicing. (9) Removable torque rod and spring guide brackets . . . for positive alignment, easier replacement. (10) Rubber torque rod bushings and rubber spring seat bushings...eliminate metal-to-metal contact. Require no lubrication.

New TDA brake shoes save up to 40 lbs. per axle



• Lightweight, pressed steel construction to give you more payload plus long wear and safety. Exclusive ¾" TDA "Econoliner" brake liners held rigidly by 12 deep-set rivets per block—*not bolts*. Liners are thickest at center where greatest wear occurs—taper down at ends. Result—longer wear, greater stopping ability. New cam roller mountings never seize or brinnel. Light nylon camshaft bearings wear up to 4 times as long! It's America's new brake shoe!

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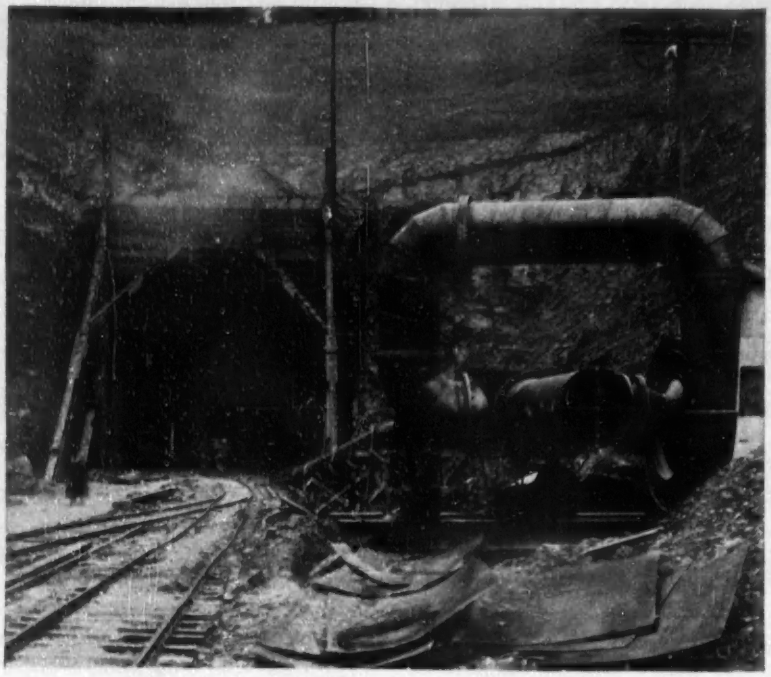
GOES IN FRESH ...COMES OUT STALE



You can't get far in tunnel construction without dependable lines to push in fresh air and pull out fumes, gases, dusts and stale air. That's why Naylor pipe has become a stand-by for contractors in providing the "wind pipes" vital to this service. Its light-weight makes Naylor easy to install — easy to extend as work progresses, particularly with the Naylor one-piece Wedge-Lock coupling to speed connections. For air lines or water lines, you can depend on Naylor for the pipe to meet your requirements. Write for Bulletins No. 507 and No. 514.

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the scheme on which the commonwealth and states are at loggerheads:

- The whole scheme will be financed out of commonwealth revenue, derived from taxing the people of all the states. But the commonwealth proposes to charge the states for the electricity generated at rates that will return to its treasury an interest on the revenue money that will be spent.
- The commonwealth claims that the project is connected with power for defense and stipulates that it shall have first call on all energy development. But it declines to give any estimate of the amount needed, making state planning difficult.
- The commonwealth claims the right not only to design and build the scheme as an agent for the states, but proposes also to use its own personnel to operate the power stations and irrigation reservoirs.

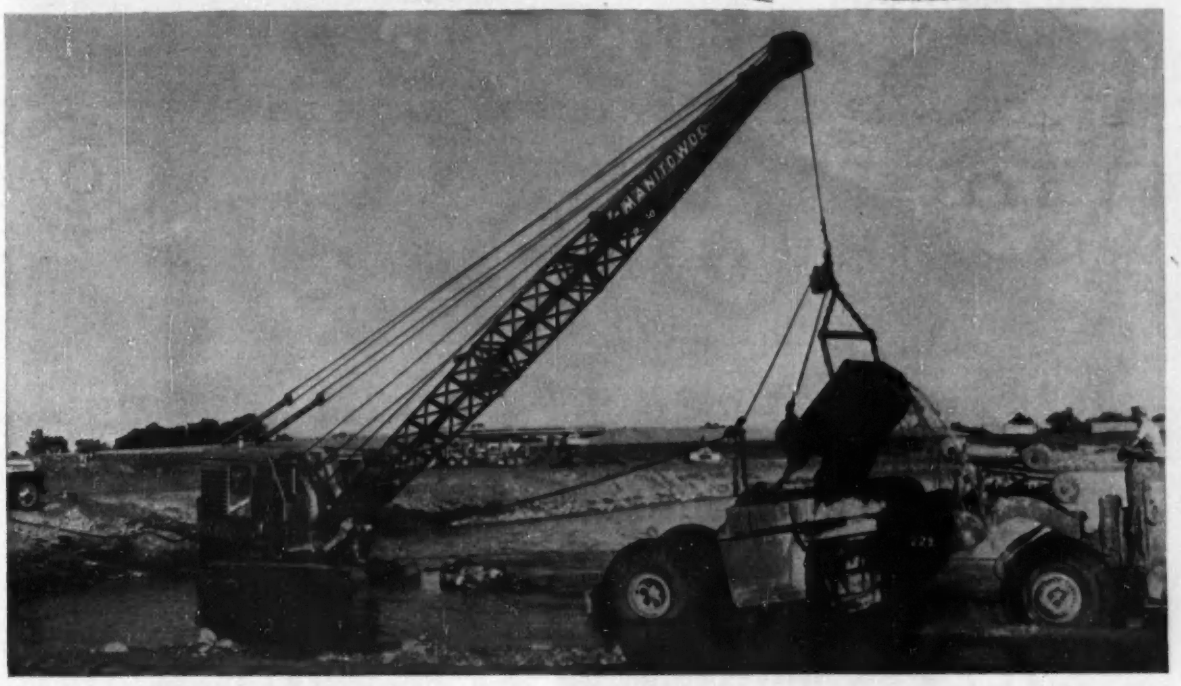
New South Wales and Victoria want the scheme to be redesigned. They claim that they can obtain all the irrigation water and power, that they can see their way to use, at less expense.

The project fundamentally is an irrigation program—a trans-mountain diversion of coastal river waters (900,000 acre ft a year) to Australia's dry interior. It involves construction of 7 major dams, 86 mi of tunnel, 491 mi of collecting canals and channels, and 16 power plants (ENR Feb. 5, 1953, p. 58).

So far the power scheme built into the project has been only sketch-designed, but is of the low load-factor type. The power stations installed during the first 10 years of development (while Adaminaby Reservoir is filling) will run only on a 10% load factor, or less than 2½ hours out of every 24. Even when this reservoir is filled, the whole planned development—boosted as some 3,060,000 kw—will run less than 5 hours per day. This means that the two states must install some 700,000 kw of generating plant for every 300,000 kw installed by the commonwealth.

Opponents of the scheme claim that hydro power will cost from two to three times as much per installed horsepower as thermal plant power. (The cost of transmission of low load-factor energy from the mountain area to Melbourne or Sydney is a serious item to be considered.) But Australia recently gave the green light to continue work after special studies reportedly proved that operating the hydro stations for 11 hours daily would cost some $3.2 million less than the cheapest thermal power (ENR Sept. 9, 1954, p. 45).

Manitowoc 2000
dives for dollars



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Faster hoist speed—swing speed

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Efficient—Economical
Simple design—only 13 working gears

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Greater Capacity
(45 ft. crane boom—50,000 lbs.)

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Less Ground Pressure
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Long, Wide Crawlers
12'4"—14'7"—16'10"

EVEN THOUGH it's up to its "travel shaft" in water — this Manitowoc 2000 is packed with profitable action! Assigned to handle the toughest part of a $250,000 Washington State Highway Commission job for Cherf Brothers near Kenniwick, Wash., this Model 2000 is slugging it out with rocks, boulders, clay, sand, gravel *and water* at the rate of 1000 yards per shift, sometimes working around the clock. Frequently this 1¼ yd. rig has to submarine its oversize bucket to a depth of 9 feet under water to get its load!

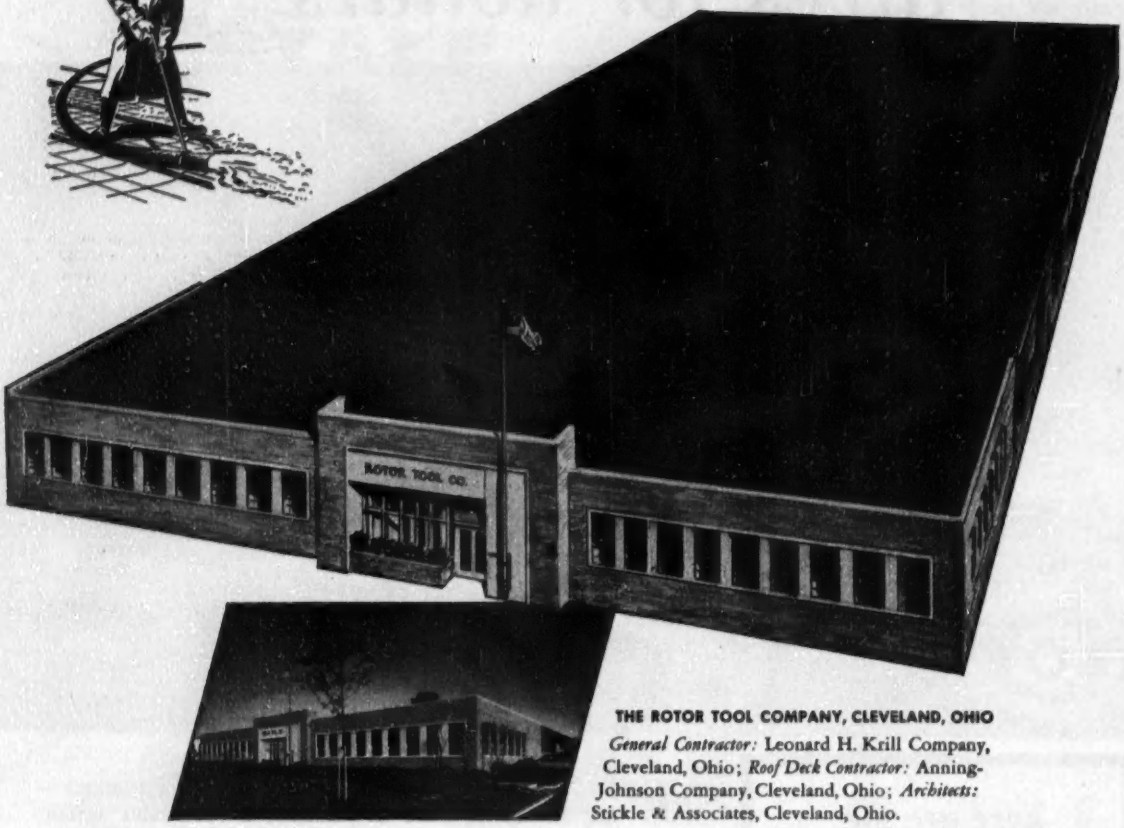
A smooth functioning torque converter reduces load shocks and boosts operating efficiency. Jaw-type steering clutches and travel gear are fully enclosed — protected from water and dirt. These are the Manitowoc features that permit this kind of wet going.

Got a tough job? Let a Manitowoc take a crack at it — take your operation out of the "red" and end up each shift in the "black".

MANITOWOC

SHOVELS 1-5 YD. — Speedcrane — CRANES 18-100 TON

Gypsum puts natural fire insurance into "FIREFIGHTER" ROOF DECKS!



THE ROTOR TOOL COMPANY, CLEVELAND, OHIO

General Contractor: Leonard H. Krill Company, Cleveland, Ohio; *Roof Deck Contractor:* Anning-Johnson Company, Cleveland, Ohio; *Architects:* Stickle & Associates, Cleveland, Ohio.

One of Rotor Tool Company's best protections against fire is the Gold Bond "Firefighter" Roof Deck poured over its new Cleveland plant. Incombustible gypsum—39,000 square feet of it—covers the building with natural fire-resistance. Gold Bond Insulation Formboards also provide this installation with a heat reduction coefficient of .18.

The wide versatility of Gold Bond "Firefighter" Roof Decks makes them especially adaptable to any industrial design—pitched, barreled or flat. Application is fast...*up to 30,000 sq. ft. can be poured in a day!* Gypsum Roof Decks can be used with lighter supporting structures because of their low dead load, permitting substantial construction savings. Maintenance costs are low, and decks can be easily cut or patched to meet any future design modifications.

For full details on "Firefighter" Roof Deck, write National Gypsum Company, Buffalo 2, N. Y. for Technical Bulletin No. 589 EN.

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. . "FIREFIGHTER" GYPSUM ROOF DECK

MEN AND JOBS

AASHO: McCoy Takes Over Top Post

This week at its 40th annual conference in Seattle, Wash., the American Association of State Highway Officials will name as president George T. McCoy, California's state highway engineer. AASHO members look upon him as a top hand among highway engineers—a man who has devoted 40 years of his life to highway work and who looks forward to many more years as eagerly as a new college graduate.

Being AASHO president at this time is a big job.

But McCoy is used to big jobs. The California Highway Department that he heads includes almost 10,000 employes and has an annual budget close to $300 million—the largest budget of any state highway department in the U. S. McCoy has headed the California Department for 11 years—all through most of World War II and the busy postwar period. He became California highway engineer in 1943 when Gov. Earl Warren decided that an engineer should be California's director of public works and elevated C. H. Purcell to that job.

• **"Migrant" worker**—McCoy came to California in one of the greatest migrations of highway engineers in U. S. history. In 1927, he was assistant state highway engineer of Washington. A change in administration there, says McCoy, meant that "they stopped our pay, and so we quit."

At about the same time, the California Highway Department was undergoing a revamping.

Not too many months before the change in Washington, California's highway engineer, R. M. Morton, and its research and testing engineer, T. E. Stanton, had visited the Washington department. They were impressed with both the work that was being done there and the people that were doing it.

One of the Washington group—Charles E. Andrew who was bridge engineer, became California's bridge engineer. He was one of the leading designers of the San Francisco-Oakland Bay Bridge, and is now back in Washington as consulting engineer for the Washington State Toll Bridge Authority.

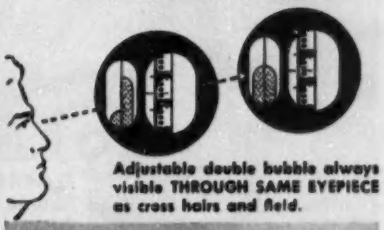
Others in the exodus from Washington to California were R. H. Wilson who was district engineer at Seattle and is now assistant state highway engineer for administration; and F. W. Panhorst who was assistant bridge engineer in Washington and is now California's assistant state highway engineer in charge of the bridge department. Another was Ridgway Gillis who had been district engineer at Vancouver, Wash., and is now California's deputy state highway engineer. Other engineers who are now prominent in the California Department were later recruited from the same source.

• **History**—Born in Oregon, McCoy attended Whitman College in Walla Walla, Wash. Later he went to Columbia University in New York

(*Continued on page 54*)

SURVEYING NEWS

NEW LEVEL WITH DOUBLE BUBBLE IS "MISTAKE-FREE"



Adjustable double bubble always visible THROUGH SAME EYEPIECE as cross hairs and field.

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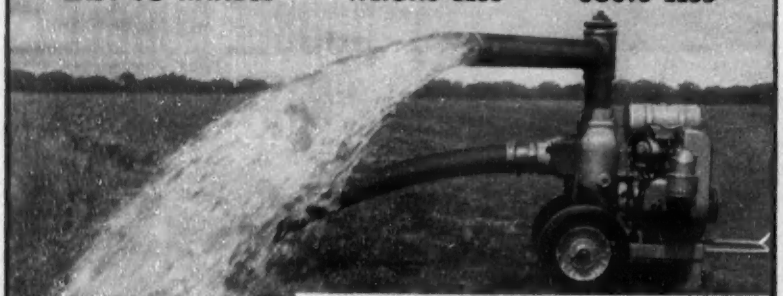

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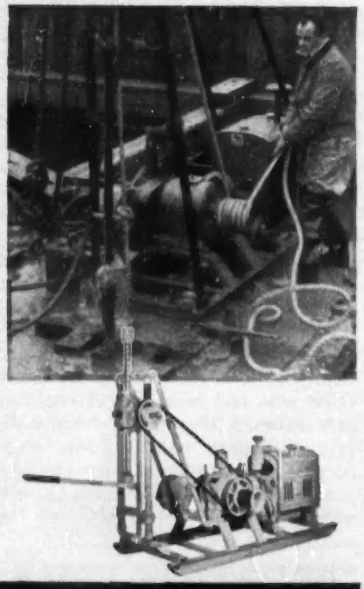

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where he completed a course in civil engineering in 1915.

After graduation, McCoy was employed as an assistant engineer on the great Catskill Aqueduct, which is part of New York City's water supply. In that position, he concentrated on bridge and dam construction and highway relocation.

Returning to the Northwest, McCoy worked for the Bureau of Public Roads in North Dakota, Idaho and Washington before he departed to join the Washington Highway Department.

• **Present job**—As head of a department with 10,000 employees, McCoy's work is largely administrative. He still, however, participates in many of the significant engineering decisions in connection with California highways.

The California department, for example, is planning a freeway at the south terminus of the Carquinez bridge. To overcome a sharp right angle turn means taking the highway through a high hill. George McCoy was very much involved in the decision to put the route through the hill in a huge open cut, rather than in a tunnel. Freeway routes through major cities also get the chief's personal attention—and they have a way of becoming the hottest potatoes handled by the department.

Men and Jobs briefs . . .

• **Careers—J. P. Cutchin** and **Sam Swaringin,** have been promoted to district engineers in the reorganization of four of North Carolina's highway divisions . . .

Robert W. Iennings named regional director for Bureau of Reclamation in Amarillo, Texas . . . **Frank W. Draney** appointed chief city building inspector in Denver to succeed **George R. McCormack** who resigned because of ill health.

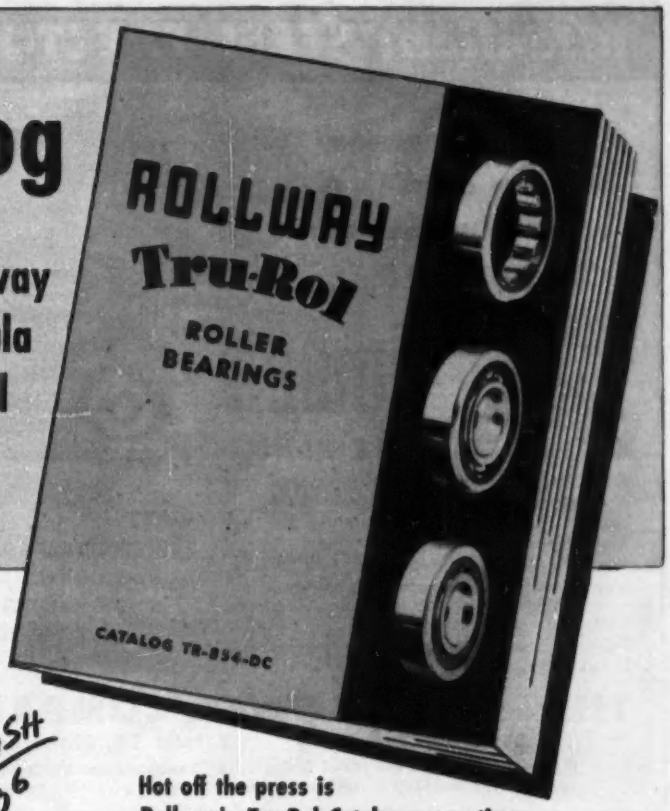
• **Associations—Maj. Thomas A. Cox, Jr.,** elected president Asheville, N. C., section American Society Civil Engineers . . . New president of Architects Society of Ohio is **C. Melvin Frank,** Columbus . . .

Fred Hubbard, National Slag Association's director of research, was a delegate to International Conference on Utilization of Blast Furnace Slag at Brussels . . . **Peter W. Eller,** New York BTEA board chairman, has named eight-man committee to aid N. Y. State Building Code Commission in formulating new non-residential building code.

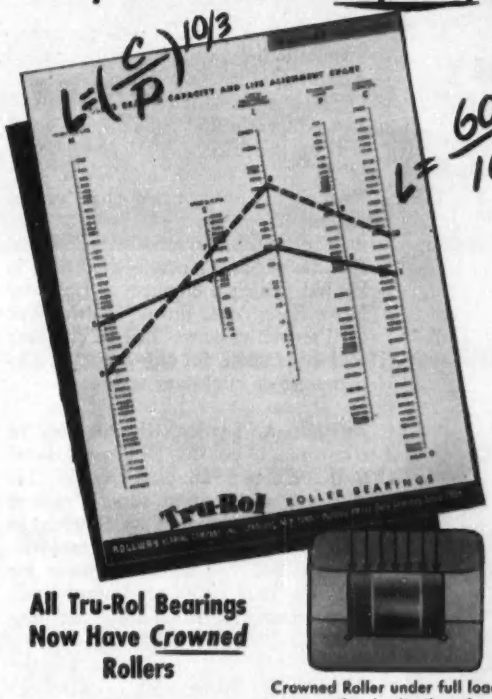
New Catalog

FEATURING

An accurate, simplified way to apply the RBEC* formula when selecting cylindrical Roller Bearings



Easy Quick Solution Graphically



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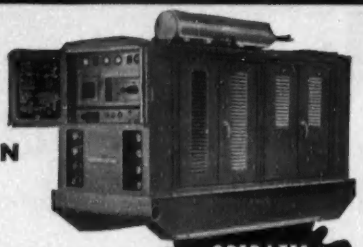

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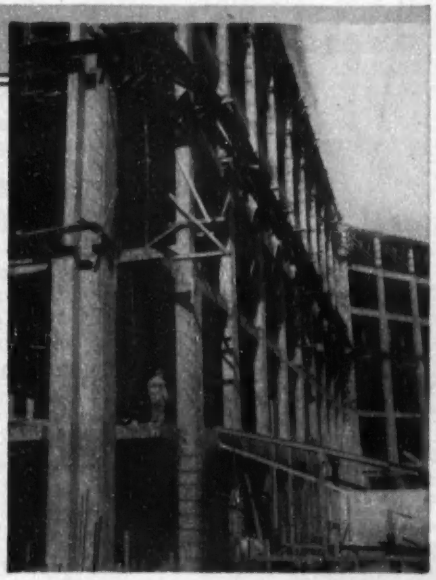
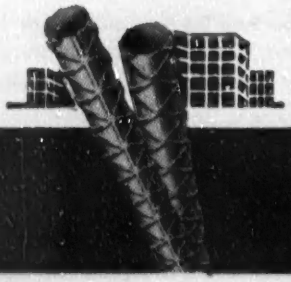


Alabama's new State Office Building where Connors Reinforcing Bars were used.



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OBITUARIES

William C. Clark, 62, construction engineer for the Delaware Schools Auxiliary Assoc., died Oct. 19 in Wilmington, Del. At one time he was with the Delaware state highway department.

Col. William B. Ladue, 85, retired army engineer, died Oct. 21 in West Point, N. Y. He was graduated from West Point in 1894 and joined the Army Corps of Engineers as a second lieutenant. In 1919 he was named port engineer of Philadelphia, and in 1927 became engineer commissioner of the District of Columbia.

Herbert A. Dingman, 63, civil engineer for the New York Board of Water Supply in northern Westchester County, died in Katonah, N. Y., Oct. 18.

Thomas F. Larkin, Jr., 42, civil engineer and surveyor with Consolidated Edison Co. in New York City, died Oct. 21 in Riverdale, N. Y. He was formerly with the Yonkers city engineer's department.

Paul B. Lee, 54, former chief of the pavements and railroads branch, engineer section, Sixth Army headquarters, Presidio of San Francisco, died Oct. 1. He was principal engineer at Luke Air Force Base, Ariz., during World War II. Previously, he was district engineer of maintenance for the Missouri Department of Highways at Joplin.

Frederic A. Snyder, 81, engineer of construction on the Holland Tunnel from 1920 to 1928, died Oct. 19. He also was engineering superintendent during construction of the Battery to Brooklyn subway from 1905 to 1908. His last job was safety engineer for the New York Board of Water Supply on the Delaware River aqueduct project.

Richard W. Brooks, 67, a civil engineer, died Oct. 20, in Philadelphia. He had been employed by major construction firms there for the past 40 years.

Bartolomeo Luisi, 86, retired Philadelphia building contractor, died Oct. 17.

Charles A. Batt, 68, general contractor in Buffalo, N. Y., for 45 years, died Oct. 19. He founded the Charles A. Batt Co., general contractors, and the Niagara Tank & Pump Co.

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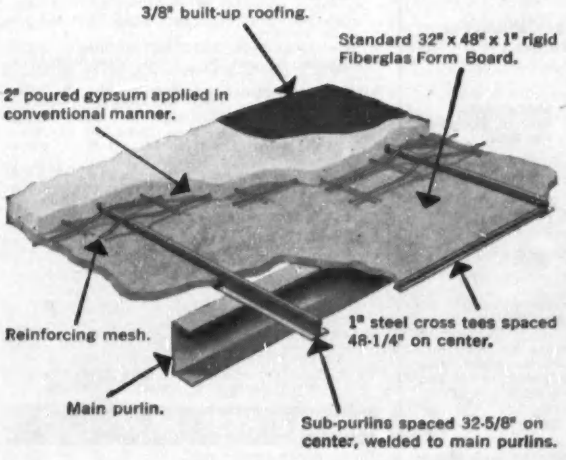
Fiberglas Acoustical Form Board

Extra #1

A fire-safe acoustical ceiling

Extra #2

A highly efficient insulation


3/8" built-up roofing.
Standard 32" x 48" x 1" rigid Fiberglas Form Board.
2" poured gypsum applied in conventional manner.
Reinforcing mesh.
1" steel cross tees spaced 48-1/4" on center.
Main purlin.
Sub-purlins spaced 32-5/8" on center, welded to main purlins.

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CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded—First Section—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager
J. A. MAHONEY, M. O. WETZEL, L. M. WINISKI, M. E. SCIORRA, F. S. DEMBEK, Reports.
J. H. WEBBER, M. R. ROESSLER, E. R. HUBER, Statistics.

NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION

▲† **Mass., Bedford**—LABORATORY—BA 11/19—U. S. Eng., 857 Commonwealth Ave., Boston, geological physics laboratory, Research Center Bldg. F, ENG-19-016-55-38, $1,500,000-$1,750,000. Plans deposit $25 refundable, Shepley, Bulfinch, Richardson & Abbott, 1 Court St., Boston, archts. CD 10/13.

BIDS ASKED—BUILDINGS

▲ **Vt., Springfield**—HIGH SCHOOL—BA 11/19—Town, School Bldg. Comn., c/o Supt. Schools, Park St., heating, ventilating, plumbing, electrical work, Junior High School. $1,369,305. Plans deposit $150. Perley F. Gilbert Assoc., Inc., 53 Central St., Lowell, Mass., archt. CD 1/11.

HEAVY CONSTRUCTION
LOW BIDS AND CONTRACTS

▲† **S. Volpe & Co., Inc.**, 185 Devonshire St., Boston, Mass. LB $1,379,000. aircraft maintenance hangar, Naval Air Station, NOY 79821, Spec. 38332, BRUNSWICK, ME. First Naval Dist., 495 Summer St., Boston, Mass. Bids Oct. 26. CD 10/19.

BUILDINGS
LOW BIDS AND CONTRACTS

▲ **John Bowen Co., Inc.**, 171 Boston St., Dorchester, Mass. LB $2,448,917. M-506 MEDICAL AND SURGICAL BLDG., Boston State Hospital, BOSTON, MASS. State, Dpt. P. Health, c/o Div. Bldg. Constr., 38 Chauncy St., Boston, Mass. Bids Oct. 28. CD 10/8.

▲ **Jefferson Constr. Co.**, 75 First St., Cambridge, Mass. CA $1,447,200. Morey Junior High SCHOOL, Fleming St., LOWELL, MASS. City, P. Wks. Comn., City Hall, Lowell, Mass. CD 10/18, under LB.

Rich Bros. Constr. Co., 410 Park Square Bldg., Boston, Mass. CA $839,223, est. $800,000. HIGH SCHOOL addn., alterations, WILMINGTON, MASS. Town, High School Bldg. Comn., c/o Supt. Schools, Wilmington, Mass. CD 10/26.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION

▲† **Md., Aberdeen Proving Ground**—AIRFIELD IMPRVS. —BA 11/24—U. S. Eng., 24 St. and Maryland Ave., Baltimore, airfield imprvs. exten. Phillips Field, $3,000,000. Plans deposit $25. CD 6/2/53, under LB.

▲† **New York**—U. S. Eng., Engineer Park, Niagara and Bridge Sts., Buffalo, Zone 7, drawings and specifications will be issued by this office early in November 1954, and bids will be opened about forty-five days after issuance of Invitation of Bids. This contract is first of a number of excavation contracts in connection with the constr. of St. Lawrence Seaway, excavation of approx. 3,900,000 cu. yd. materials comprising glacial tills and clays for Long Sault Canal, Massena, St. Lawrence Co., the work site is 4-mi. N-NE of Massena, St. Lawrence Co. Contr. No. 1. Serial CIVENG-30-023-55-28. Plans deposit $100. This office plans to advertise addnl. excavating contracts for similar types of work commencing about Dec. 15, 1954, totaling approx. 20,000,000 cu. yds. CD 9/9.

HEAVY CONSTRUCTION
LOW BIDS AND CONTRACTS

▲ **NEW YORK**—Triborough Bridge & Tunnel Auth., Admin. Bldg., Randall's Island, New York.
Slattery Rock Co., 46-36 54 Rd., Maspeth, N. Y., CA $3,626,522. Contr. QME-8, constr. Queens-Midtown Expressway, Maurice Ave. to 80th St., Queens Co. Bids Oct. 20. CD 9/29.

▲ **NEW YORK**—Bureau Contracts & Accounts, The Governor Alfred E. Smith State Office Bldg., Albany,
Fehlhaber Corp., 217 E. 49 St., New York 17, N. Y., LB $2,263,277, est. $2,273,000. 0.17 mi. New York State Thruway-New England Sect. Contr. 5B, (Eastchester Creek Bridge superstructure) FANETC. 54-3, Bronx Co.;
received no bids Oct. 28, 0.32 mi. repair, clean and paint 2 bridges, Narrowsburg-Callicoon Pt. 3, SH 8449, Callicoon-Long Eddy, Pt. 2, S.H. 8494. R.C. 54-102, Sullivan Co., $31,000. CD 10/5.

▲ **Passenger Belt Conveyors, Inc.**, 1144 E. Market St., Akron, O., LB $3,881,000, est. $2,000,000. moving platform, conveyor sys. between Times Square and Grand Central, NEW YORK, N. Y. New York City Transit Auth. 370 Jay St., Brooklyn 1, N. Y. Bids Oct. 29. CD 10/11.

Union Building & Constr. Co., 631 Main Ave., Passaic, N. J., CA $987,864, est. $1,000,000. constr. Lake De Forest Dam, Clarkston, SPRING VALLEY, N. Y. Spring Valley Water Works & Supply Co., George H. Buck, pres., Spring Valley, N. Y. Bids Oct. 11. CD 10/22, under LB.

▲ **NEW JERSEY**—New Jersey Turnpike Auth., Administration Bldg., New Brunswick,
Reid Contg. Co., Mutton Hollow Rd., Woodbridge, N. J., CA, $2,086,684, grading, drainage and paving in area between easterly end of Newark Bay Bridge and the Avenue "E" Interchange in Bayonne, Contract N-11, Hudson Co. Bids Oct. 14. CD 9/15.

▲ **MARYLAND**—State Rds. Comn., 108 E. Lexington St., Baltimore, Zone 2,
Nello L. Teer Co., Durham, N. C. CA $1,133,522. grading, drainage, surf. 4.523 mi. dual hy., near Burtonsville, Contr. M 531-1-320, Montgomery Co. CD 9/28, under LB.

MARYLAND—State Rds. Comn., 108 E. Lexington St., Baltimore, Zone 2,
Wright Constr. Co., Box 1580, Columbus, Ga. CA $852,000. grading, drainage, surf. dual hy. 27.46 mi. Annapolis-Washington Expressway, Contr. P 631-15-320, Prince Georges Co. CD 10/11.

BUILDINGS
LOW BIDS AND CONTRACTS

▲ **John Rosenblum, Inc.**, 1860 Broadway, New York 23, N. Y. LB $1,934,000. general constr.;
Davidson Electric Co., 1265 Atlantic Ave., Brooklyn 16, N. Y., LB $322,900, electric for new Junior HIGH SCHOOL 166, Van Sicklen Ave. and Linden Blvd., BROOKLYN, N. Y. Bd. Educ., Bureau Constr., 42-15 Crescent St., Long Island City 1, N. Y. Bids Oct. 29. CD 9/27.

▲ **Flower Hill Estates**, c/o Anderson & Smith, archts., 3754 Merrick Rd., Seaford, N. Y. Owner Builds. $1,400,000 51 HOUSES, tract on Port Washington Blvd., north of Northern Blvd., FLOWER HILL, N. Y.

▲ **Frank E. Freeman, Inc., & Mandel Bros. Contr. Corp.**, 188 Montague St., Brooklyn 2, N. Y., LB $1,916,730. Cont. 2881-A, general constr.;
Raisler Corp., 129 Amsterdam Ave., New York 23, N. Y. LB $417,000, Cont. 2881-C, heating and ventilating for alterations in connection with rehabilitation of Whitehall-South Street FERRY TERMINAL BLDG., Manhattan Boro, NEW YORK, N. Y. Comr. Marine & Aviation, Pier 1, North River, New York 4, N. Y. Bids Sept. 20. CD 8/26.

▲ **Ragnar Benson, Inc.**, 2 Gateway Center, Pittsburgh, Pa. CA $689,689. 7 story, 120x220 ft. concrete parking GARAGE, Site C, Blvd. of Allies, 3rd Ave. and Smithfield St.;
United Constr. Co., 1204 Lincoln Ave., Pittsburgh, Pa. CA $1,610,000, 7 story, concrete parking GARAGE, 4th Ave., Cherry Way and Diamond St., PITTSBURGH, PA. Pittsburgh Public Parking Auth., 200 Ross St., Pittsburgh, Pa. Bids Sept. 30. CD 10/13 under LB.

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $34,000; other public works $60,000; industrial buildings $82,000; other buildings $300,000. Also Foreign projects of $100,000 and more in size of interest to American contractors.

By Regions & Classes of Construction
(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED

New England
Middle Atlantic
South
Middle West
West of Mississippi
Far West

PROPOSED WORK
Water Supply
Sewers, Waste Disposal
Bridges
Streets & Roads
Earthwork, Waterways
Public Buildings
Mass Housing
Commercial Buildings
Industrial Buildings
Unclassified

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.
BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.
LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.
CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.

CD dates shown are of Construction Daily issue in which last previous report was published.

Symbols and Abbreviations Include:

† Federal Government
▲ Project of $1,000,000 or over.
ENR Engineering News-Record
CD Construction Daily

For additional reports see Construction Daily.

SOUTH

HEAVY CONSTRUCTION
LOW BIDS AND CONTRACTS

▲ **VIRGINIA**—State Hy Dpt., 1221 E. Broad St., Richmond,
Diamond Constr. Co., Ocean Steamship Terminal, Savannah, Ga., CA $4,847,527, substructure;
Bethlehem Steel Co., Inc., 1305 Mercantile Trust Bldg., Baltimore 3, Md., CA $7,948,106, superstructure for Rappahannock River Bridge, Greys Point, Lancaster and Middlesex Counties. Modjeski Masters, State Street Bldg., Harrisburg, Pa., engrs. Bids Oct. 11, awarded Oct. 27. CD 10/13, under LB.

▲ **NORTH CAROLINA**—State Hy. & P. Wks. Comn., Raleigh,
Sanford Constr. Co., Sanford, N. C. and **J. K. Cecil & Son**, Box 169, Lexington, N. C., LB $2,693,838, est. $3,000,000. East-West Expressway, Winston-Salem, Proj. 7476, Forsyth Co. Bids Oct. 26. CD 10/11.

▲† **M. T. Reed Constr. Co.**, 162 Millsaps Ave., Jackson, Miss., CA $1,459,871. maintenance hanger with access apron, Auxiliary Field No. 9, EGLIN AIR FORCE BASE, FLA. U. S. Eng., P. O. Box 1169, Mobile 7, Ala. Bids Oct. 21. CD 10/6.

▲ **LOUISIANA**—State Hy. Dpt., Highway Office Bldg., Baton Rouge,
R. B. Tyler Co., 1446 Levering St., Louisville, Ky. LB, $1,150,039. bit. hot mix surf. 12.123 mi. Starks-DeQuincy Hy., State Rte. 7, S. P. 12-02-12, 12-03-05 and 12-04-10, F. A. Proj. F 389 (5), Calcasieu and Beauregard Parishes;
L. M. Winford, Box 564, Minden, La. LB, $69,379. bit. surf. tr. 3.46 mi. Francisville-Keatchie and Keatchie-Caddo Parish line Hys., State Rte. 1909 and 420, S. P. 98-01-02 and 816-03-01, De Soto Parish;
L. H. Bossier, 212 Maryland Ave., Alexandria, La. LB, $84,944 bit. surf. tr. 5.5 mi. Haddens Ferry-Anvacoco Hy., State Rte. 138, S. P. 133-02-05, Vernon Parish;
Coastal Asphalt Co., Box 911, Baton Rouge, La. LB, $365,776. bit. surf. tr. 8.304 mi. Vatican-Sunset Hy., State Rte. 161, S. P. 217-02-05, F. A. Secondary Proj. S 181 (1), St. Landry Parish;
Barber Bros. Co., Box 629, Baton Rouge, La. LB, $107,442. bit. surf. tr. 1.985 mi. Burtville-Essen Hy. State Rt. 887, S. P. 257-30-05, East Baton Rouge Parish;
H. L. Allen & Sons, Box 428, Elton, La. LB, $441,758. bit. surf. tr. 1.546 mi. Magnolia-Amite Church Hy., State Rte. 1766, S. P. 262-31-11, F. A. Secondary Proj. S 148 (1), East Baton Rouge and Livingston Parishes;
W. H. Patterson & Co., Box 2229, Baton Rouge, La. LB, $100,181. bit. surf. tr. 3.577 mi. New Iberia-Olivier Hy., State Rte. 443, S. P. 823-26-01, Iberia Parish;
Anderson & Courtney, Box 565, Amite, La. LB, $129,463. bit. surf. tr. 4.258 mi. Amite Church-Watson, Amite Church-Denham Springs and Amite Church-East Hys., State Rte. 2202, 103, 334 and 1766, S. P. 832-05-07, 275-03-08 and 262-31-12, Livingston Parish;
T. L. James & Co., Inc., Ruston, La. LB, $253,780. c. conc. 1.857 mi. Williams Blvd. (Kenner) State Rte. 1249. S. P. 283-30-05, Jefferson Parish. Bids Oct. 20. CD 9/30 and 10/4.

BUILDINGS
LOW BIDS AND CONTRACTS

Franks Lumber Co., Hammond, La. CA $843,235. Receiving HOSPITAL, MANDEVILLE, LA. State Div. Admin., Capitol Annex, Baton Rouge, La. Bids Oct. 19. CD 10/26.

▲ **Southern Constr. Co., Inc.**, Administration Bldg., Daniel Field, Augusta, Ga. CA $2,629,984. 7 E.M. BARRACKS, misc. utilities. FORT CAMPBELL, KY. U. S. Eng., 303 Federal Office Bldg., Nashville, Tenn. Bids Oct. 21, awarded Oct. 25. CD 10/26, under LB.

MIDDLE WEST

BIDS ASKED—BUILDINGS

▲ **Mich., East Lansing**—APARTMENTS—BA 11/19—State, Karl H. McDonel, secy., Michigan State College, East Lansing, 30 apartment bldgs. for married students, $2,700,000. Plans deposit $20 refundable, Manson & Carver, 517 N. Washington St., Lansing, archts. CD 8/13.

▲ **Ind., Muncie**—HOSPITAL—BA 12/1—Bd. Trustees Ball Memorial Hospital, 5 story hospital addn., and

(Continued on page 60)

"Does the work of 2 machines"

Pushing 2½-yd. bladeful of cover earth, Tournatractor finish-grades the drive-in site. Tire marks in foreground indicate how firmly Tournatractor has packed the loose trash of the former dump.

THE L & Z CONSTRUCTION COMPANY, Putnam, Connecticut, has just finished a grading job which accurately tested dirtmoving abilities of a 148 hp crawler-tractor, a 101 hp crawler, and a 186 hp rubber-tired Tournatractor.

The work consisted of turning an unsightly rubbish dump near Boston into a modern drive-in theater.

Eliminates need for roller

Of the 30,000 cubic yards of waste and trash which had to be leveled, Tournatractor alone handled half. The other 2 tractors each handled a fourth. Had the crawlers alone done the job, reports Raymond E. Leo, secretary-treasurer of the L & Z Company, sheepsfoot rollers would have been necessary. With Tournatractor on the job, big low-pressure tires so effectively compacted the trash in normal travel that rollers were not needed.

Needs less maintenance

Spreading and grading the 10,000 yards of cover dirt brought in by trucks, Tournatractor proved equally effective. Here, it dozed so fast (usually at 3.7 mph) and backed up so fast (usually at 8 mph) that it completed twice as many cycles as each of the crawlers. Says Mr. Leo, "Tournatractor did as much work on this job as the two track-type machines combined. It required less maintenance, too."

A major reason for Tournatractor's advantage over the crawlers is that it has more horsepower. Today's Tournatractor develops 208 hp . . . the two crawlers, 148 and 101 hp. Tournatractor also has more speed . . . 19 mph top, compared to 5 and 6 mph for the crawlers . . . 3.7 mph second gear compared to 2.3 and 2.2. Tournatractor also has less power loss. Its 4 rubber-tired wheels naturally roll easier than the 450 to 550 moving parts of a crawler track assembly. And the wheeled machine, with only 4 moving parts in place of hundreds, naturally needs less lubrication and less repair work.

Find out more

It will pay you to investigate *all* the maintenance and speed advantages of the LeTourneau-Westinghouse tractor-on-rubber. Let us show you Tournatractor in action so you can judge it for yourself. Call today to arrange a mutually-convenient time.

Imagine how much grit would be packed in around the idlers and rollers of your crawler's track assembly after one push through dirt like this. Because Tournatractor rolls over the dirt instead of grinding *through* it, this rubber-tired machine often gives you faster cycles and less maintenance than crawlers.

Tournatractor—Trademark T-700-8-b

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LeTourneau-Westinghouse Company

PEORIA, ILLINOIS

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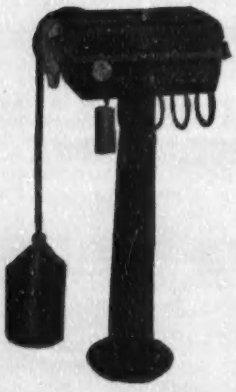
Multi-Circuit



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(Continued from page 58)

remodeling present structure. Total $4,000,000. CD 12/31/52.

▲ **OHIO**—State Hy. Dpt., Columbus,

Ralph Myers Contg. Corp., Box 235, Salem, Ind., CA $1,342,465, est. $1,828,500, Type T-71 and structures 1.834 mi. S.R. 7, Sects. (4.67-6.06), FG-430 (10), Jefferson Co.;

Shelly & Sands, Inc., Thornville, O., CA $1,278,312, est. $1,288,000, Type T-35, 13.531 mi. U. S.R. 305, Sects. (16.73-18.81), 0.00, Allen and Hardin Counties;

The Horvitz Co., 913 Midland Bldg., Cleveland, O. CA $845,552, est. $1,157,700, Type T-71, 2.52 mi. S.R. 17, Sect. 2.99, Cuyahoga Co.;

The W. J. Seidensticker Co., 3585 E. Fulton St., Columbus, O., CA $1,299,747, est. $1,382,200, Type T-71 and structure, 4.386 mi. U. S.R. 52. Sects. (16.74-20.65), Brown Co.;

Brums Coal Co., Inc., 101 Lind Arcade Bldg., Zanesville, O., CA $1,639,362, est. $2,142,250, Type T-35 on B-119 and structure 1.823 mi. S.R. 7, Sects. (18.59-19.59), Jefferson Co.;

V. N. Holderman & Sons, Inc., 890 Oakland Park Ave., Columbus, O., CA $992,472, est. $1,176,500, Type T-71, T-35 and structure 4.618 mi. U. S.R. 23, Sects. (13.05-17.65), Pickaway Co. Grand total $7,397,910. Bids Oct. 14. CD 10/21, under LB.

▲ **States Improvement Co.**, 30 N. La Salle St., Chicago 2, Ill., CA, $1,163,725, reservoir for Western Ave. Pumping Station, CHICAGO, ILL. City, City Hall, Chicago, Ill. Bids Sept. 1, awarded Oct. 20. CD 9/9, under LB.

▲ **Geo. Sollitt Constr. Co.**, 109 N. Dearborn St., Chicago 2, Ill., CA, $1,782,400, refuse incinerator, Medill Ave., CHICAGO, ILL. City, City Hall, Chicago, Ill. Awarded Oct. 20. CD 10/6, under LB.

▲ **James McHugh Constr. Co.**, 6449 S. South Chicago Ave., Chicago, Ill., LB, $1,372,224, sewage treatment works addn., CHICAGO HEIGHTS, ILL. Sanitary Dist. of Bloom Twp., 307 E. 14 St., Chicago Heights, Ill. Bids Oct. 22. CD 10/6.

BUILDINGS
LOW BIDS AND CONTRACTS

▲ **Miletti Constr. Co.**, 2473 State St., Akron, O., LB $1,011,442. South HIGH SCHOOL, AKRON, O. Bd. Educ., 70 N. Broadway, Akron, O. Bids Oct. 15. CD 9/23.

▲ **Potters Lumber Co.**, East Liverpool, O., CA $1,111,900, general constr.;

Gallagher Plumbing & Heating Co., Inc., 172 Furnace St., Akron, O., CA $307,701, plumbing and heating for Downtown Junior HIGH SCHOOL and new GRADE SCHOOL, EAST LIVERPOOL, O. Bd. Educ., East Liverpool, O. Awarded Oct. 26. CD 10/27, under LB.

▲ **Jennings & Churrella**, New London, O., CA $1,260,000. men's DORMITORY and women's DORMITORY, OBERLIN, O. Oberlin College, Oberlin, . Bids Oct. 7. CD 10/13, under LB.

▲ **Power Constr. Co.**, 125 S. Marion St., Oak Park, ILL., CA, $1,537,536, Elmwood Park HIGH SCHOOL ELMWOOD PARK, ILL. School District 232, 2319 7th Ave., Elmwood Park, Ill. Bids Oct. 14, awarded Oct 25. CD 10/27, under LB.

▲ **E. I. duPont de Nemours & Co.**, duPont Bldg., Wilmington, Del. Own Forces. $15,000,000. neoprene synthetic rubber PLANT, consisting combination office and laboratory, 3 mfg. bldgs., MONTAGUE, MICH. CD 1/29.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION

† **Ark., Blytheville**—HANGAR, etc.—BA 11/23—U. S. Eng., P.O. Box 867, Little Rock, maintenance hangar, sewage lift station, Blytheville Air Force Base, ENG-03-050-55-49, $500,000-$1,000,000. Extended date. CD 10/27.

▲ **Mo., Kansas City**—BA 11/29—City, City Hall, electrical pumps, equip. for Turkey Creek Pumping Station. $1,000,000. CD 10/14/53.

HEAVY CONSTRUCTION
LOW BIDS AND CONTRACTS

▲† **Bushman Constr. Co.**, 4638 J. C. Nichols Parkway, Kansas City, Mo. LB $2,364,325, est. $2,595,766. addnl. parking apron and hangar access pavement, Forbes Air Force Base, TOPEKA, KAN. U. S. Eng., 601 Davidson Bldg., Kansas City 8, Mo. Bids Oct. 27. CD 10/6.

▲ **Oklahoma Planning & Resources Bd.**, State Capitol, Oklahoma City, Okla., rejected bids Oct. 20, lodge and cabins, Lake Texhoma, Bryan Co., OKLAHOMA. LB $2,165,000, est. $2,029,000. CD 9/21.

BUILDINGS
LOW BIDS AND CONTRACTS

▲ **Arthur Sanford & Co.**, 1000 Des Moines Bldg., Des Moines, Ia. Owner Builds, $1,000,000. APARTMENT, DES MOINES, IA.

▲† **Robert E. McKee General Contractor, Inc.**, Box 651, Albuquerque, N. M., LB, $5,983,996, fifteen BARRACKS, utilities, Serial No. ENG-29-005-55-31, Fort Bliss, EL PASO, TEX. U. S. Eng., Box 1538, Albuquerque, N. M. Bids Oct. 26. CD 10/14.

▲† **Robert E. McKee General Contractor, Inc.**, Box 651, Albuquerque, N. M., LB, $1,917,311, Schedule A; LB, $340,190, Schedule B, 37 BARRACKS at Beaumont General Hospital, Serial No. ENG-29-005-55-32, EL PASO, TEX. U. S. Eng., Box 1538, Albuquerque, N. M. Bids Oct. 25. CD 10/14.

▲† **Walter Nashert Co.**, 16 N. E. 27 St., Oklahoma City, Okla., LB, $2,777,308 Sch. 1; $2,800,576, Sch. 2; $2,410,226, Sch. 3; $2,424,616, Sch. 4; 6 DORMITORIES, Inv. 25-066-55-28, CAMP CARSON, COLO. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids Oct. 26. CD 10/1.

FAR WEST

BUILDINGS
LOW BIDS AND CONTRACTS

▲ **Plewe Constr. Co.**, 838 E. South Temple St., Salt Lake City, Utah, CA $1,243,989, general constr. HIGH SCHOOL, PROVO, UTAH. Bd. Educ., 75 S. 4th West St., Salt Lake City, Utah. Bids Sept. 21. CD 10/19.

▲† **Wick Constr. Co. & Dahlgren Constr. Co.**, 720 N. 35 St., Seattle, Wash. LB $3,983,010 BARRACKS, ENG-45-108-55-42, FORT LEWIS, WASH. U. S. Eng., 4735 E. Marginal Way, Seattle 4, Wash. Bids Oct. 26. CD 9/20.

▲ **Crown Constr. Co.**, 1231 S. La Brea Ave., Los Angeles, Calif., CA $1,042,327, 70,000 sq. ft. Arroyo HIGH SCHOOL, EL MONTE, CALIF. El Monte Union High School Dist., 630 S. Tyler Ave., El Monte, Calif. Bids Oct. 5. CD 10/13, under LB.

▲ **Oliver Rousseau Constr. Co.**, P. O. Box 328, Hayward, Calif. Owner Builds, $15,000,000. RESIDENTIAL DEVELOPMENT called "Fairway Park", incl. 1,100 homes and multi-million dollar 16-acre shopping center, 2½ mi. south of HAYWARD, CALIF. Pereira & Luckman, 9220 Sunset Blvd., Los Angeles, archts. for shopping center.

Mc Donald Bros., Box 404, Lancaster, Calif., Owner Builds, $807,000. 94 frame, stucco DWELLINGS, Newtree St., W. Aves. 12 and 14, LANCASTER, CALIF.

Wagner & Fremer, 5542 Cahuenga Blvd., Los Angeles, Calif., CA $909,946, strengthen and modernize AUDITORIUM at Hollywood High School, LOS ANGELES, CALIF. Bd. Educ., 1425 S. San Pedro St., Los Angeles, Calif. Bids Oct. 12, awarded Oct. 22. CD 1/22, under LB.

▲ **Dinwiddie Constr. Co.**, Crocker Bldg., and **Wagner & Martinez**, 181 S. Park St., both San Francisco, Calif., CA, $15,000,000. 50-store incl. 7 major buildings Stanford SHOPPING CENTER, on university property, PALO ALTO, CALIF. Stanford University, Palo Alto, Calif. CD 7/14/52.

CANADA

BIDS ASKED—BUILDINGS

▲ **B. C., Vancouver**—POLYMERIZATION UNIT, etc.—Bids Asked—Imperial Oil Ltd., 56 Church St., Toronto, Ont., installing catalytic polymerization unit and naphtha fractionator. $2,900,000. CD 11/29/51.

HEAVY CONSTRUCTION
LOW BIDS AND CONTRACTS

▲ **Poole Constr. Co. Ltd.**, 2402 2 A St. Southeast, Calgary, Alta., CA, $1,250,000. 150 married quarters housing units;

Borger Bros. Ltd., 20004 14 A St. S.E., Calgary, Alta., CA, $270,000. water and sewer ground services for 150 housing units, R.C.A.F. Station, CALGARY, ALTA. Central Mortgage & Housing Corp., 227 Laurier St. W., Ottawa, Ont. Awarded Oct. 20.

▲ **Scott-Jackson Constr. Ltd.**, 501 Evans Ave., Toronto, Ont., Total est. $1,300,000, rough roads and grading for hospital, TORONTO, ONT. Lakeshore Hospital Assn., 26 35 St., Long Branch, Ont. CD 3/4/53, under Commercial Buildings.

AMERICANS ABROAD

HEAVY CONSTRUCTION
LOW BIDS AND CONTRACTS

▲ **Hudson Engineering Corp.**, 2711 Danville St., Houston, Tex., U. S. A. CA $23,500,000. design and construct, gas processing plant, Karachi; CA $3,000,000 main gas line (after gas treatment) from Sui via Hyderabad to Karachi; CA $3,250,000, gas lines gathering sys. in Sui field, KARACHI, WEST PAKISTAN. Pakistan Petroleum Ltd., Karachi, West Pakistan.

Proposed Projects

WATER SUPPLY

▲ **Tex., Sheldon**—Harris County Water Control & Imprvt. Dist. 29, Court House, Houston, Tex. and Sheldon, Tex., water distr. sys., $1,760,000; water mains, $750,000; water pumping unit, $250,000.

Yukon Territory, Whitehorse—City, P. Hewitt, clk., water and sewer services, incl. pumping station, clear water reservoir, water mains, sanitary sewers, pumping screens, etc. $800,000-$1,000,000. Canadian-British Eng., Consultants, 1654 Avenue Rd., Toronto, Ont., consult. engrs. CD 12/1.

SEWERS, WASTE DISPOSAL

▲ **Ind., Gary**—City, City Hall, storm and sanitary sewers, $2,300,000. Hurst-Roche, Inc., Hillsboro, Ill., consult. engr. CD 8/26/43.

▲ **Mich., Pontiac**—Oakland Co., Ralph A. Main, drain comr., 1 Lafayette St., 12 town drain project, Berkley, Ferndale, Royal Oak, Royal Oak Twp., Troy, Southfield, Pleasant Ridge, Clawson, Hazel Park, Huntington Woods, Birmingham and Oak Park, $30,000,000. Hubbell, Roth & Clark, Inc., 2640 Buhl Bldg., Detroit, consult engr. CD 4/21/53.

▲ **O., Niles**—City, Edward P. Lenney, mayor, City Hall, sewage treatment plant and interceptor sewerage sys. $2,156,709. Floyd G. Browne & Assoc., Marion, consult. engrs. CD 8/27/48.

BRIDGES

▲ **Minn., Minneapolis**—Hennepin Co., R. F. Fitzsimmons, aud., Minneapolis, and Dakota Co., N. G. Yanz, Hastings, bridge over Minnesota River en Cedar Ave., $1,500,000. L. P. Zimmerman, hy. engr. for Hennepin Co., and H. E. Palmer, hy. engr. for Dakota Co.

▲ **Minn., Minneapolis**—Hennepin Co., R. F. Fitzsimmons, aud., bridge over Minnesota River on Lyndale Ave. South. $1,500,000. L. P. Zimmerman, c/o owner, engr.

▲ **NEBRASKA**—State Dpt. Roads & Irrigation, Lincoln, Lancaster Co.—O Street viaduct in city of Lincoln on state hy. $1,500,000. L. N. Ress, state engr.

STREETS AND ROADS

▲ **MASSACHUSETTS**—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,
New Bedford—first sect. hy. relocation Rte. 140 Ashley Blvd. 6.7 mi. 44 ft. four lanes, $2,000,000.
Taunton—second sect. hy. relocation Rte. 140 Amvets Hy. 6 mi., $2,000,000.

▲ **NEW YORK**—Bureau Contracts & Accounts, The Governor Alfred E. Smith State Office Bldg., Albany, **Sullivan Co.**—new 5¼ mi. sect. of Rte. 17 from Ferndale northwest to connect with Parksville By-Pass. $7,500,000.

EARTHWORK, WATERWAYS

▲ **Tennessee**—Aluminum Co. of America, 1200 Alco Bldg., Pittsburgh 19, Pa., 1,400x82 ft. dam and hydroelectric power project on Little Tennessee River near Chilhowee, Blount and Moore Counties. $10,000,000.

AIRPORTS

▲ **O., Columbus**—AIRPORT IMPRVS.—City, City Hall, constr. and pave taxiway and aircraft loading apron, at Port Columbus. $1,000,000. CD 2/21/51.

PUBLIC BUILDINGS

▲ **Calif., Agnew**—HOSPITAL, etc.—State Div. Architecture, P. Wks. Bldg., Sacramento, modernization and addns. Agnew State Hospital. $4,300,000.

▲ **Calif., Los Angeles**—HEATING PLANT, etc.—Los Angeles Co., Hall of Records, Los Angeles, central heating plant and distr. sys. for county buildings. $2,500,000. M. A. Nishkian & Co., 3754 Long Beach Rd., Long Beach, consult. engrs.

▲ **Calif., Orange**—SCHOOLS—Orange Unified School Dist., Orange, $1,100,000 bond election Dec. 14, schools. CD 5/29/50.

▲ **Conn., West Hartford**—HIGH SCHOOL—Town Bd. Educ., 51 Memorial Rd., plans by Nichols & Butterfield, 998 Farmington Ave., high school, south of Rockledge Country Club, $1,298,000.

▲ **Kan., Lawrence**—HOSPITAL—City, voted $1,000,000 bonds Oct. 20, Lawrence Memorial Hospital addn. CD 9/22.

▲ **Mich., Berkley**—SCHOOL—City, Bd. Educ., 2325 Catalpa St., voted $2,000,000 bonds Oct. 19, Junior High School, Earl G. Meyers, 806 Farwell Bldg., Detroit, archt. CD 9/29.

▲ **N. Y., Valatie-Kinderhook**—SCHOOL—Valatie-Kinderhook Central School Dist. No. 1, Ralph Duck, pres., Kinderhook, plans by John H. Fisher, 29 Wendell Ave., Pittsfield, Mass., central school. $1,250,000.

▲ **Pa., Allentown**—SCHOOL—Allentown School Dist., 31 S. Penn St., plans by Wolf & Hohn, 459 Hamilton St., elementary school. $1,000,000. CD 1/26/53.

▲ **Wash., Connell**—SCHOOL—School District J51-162, Connell, high school. $1,000,000.

▲ **Que., Verdun**—CITY HALL—City, A. J. Burgess, city clk, plans by J. A. Dustrisac, 1069 Beatty Ave., city hall, Verdun Ave. $1,250,000. H. Hadley, c/o owner, engr. CD 11/11/53.

COMMERCIAL BUILDINGS

▲ **Calif., Pinole**—HOME DEVELOPMENT—Herbert Albright & Assocs., c/o Carl A. C. Hill, 692 13 St., Richmond, 900-home development, near here. $10,800,000.

▲ **Calif., Torrance**—DWELLINGS—Grand Constr. Co., 134 W. Beach Ave., Ingelwood, plans by L. C. Major & Assocs., 511 N. La Cienega Blvd., Los Angeles, 104 frame, stucco dwellings, $1,000,000.

▲ **Minn., Moorhead**—HOSPITAL—Sisters of St. Francis, Mother General Thomasine, Moorhead, plans by Bettenburg, Townsend & Stolte, 1437 Marshall Ave., St. Paul, hospital, $1,000,000.

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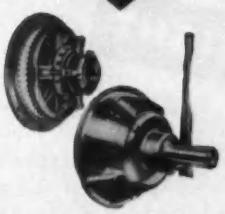

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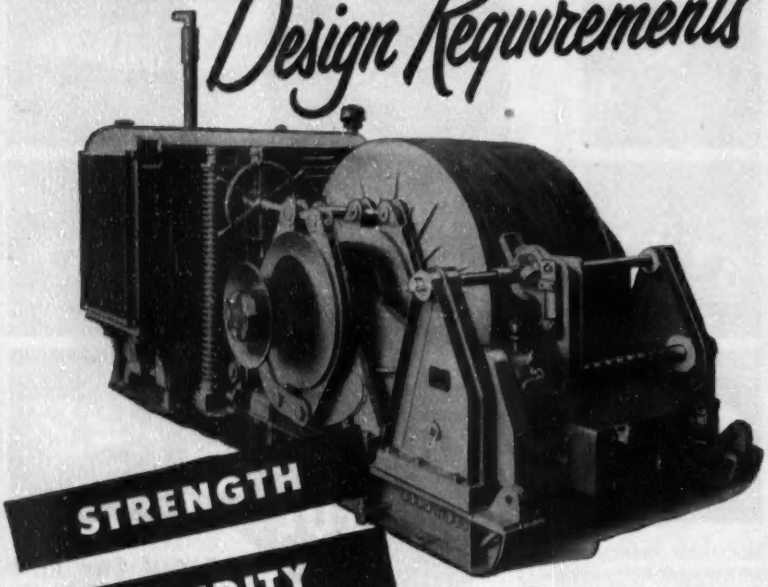

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▲ **N. Y., New York** — NURSING HOME — Dominican Sisters, c/o Eggers & Higgins, archts., 100 E. 42 St., Zone 17, 6 story nursing home, 64-71 Jackson St. $1,300,000.

▲ **N. Y., New York**—OFFICE, etc.—405 Park Ave., Inc., 342 Madison Ave., Zone 17, plans by Herbert Tannenbaum, 205 E. 42 St., Zone 17, 16 story office and store, 401-405 Park Ave. $1,250,000.

▲ **N. Y., New York**—AUDITORIUM, etc.—Rockefeller Institute for Medical Research, York Ave. and 66 St., plans by Harrison & Abramowitz, 630 Fifth Ave., Zone 20, 3 buildings to house auditorium, faculty club and executive offices on 12-acre tract on Park Ave. between 66 and 67 Sts. $2,000,000.

▲ **N. Y., New York**—OFFICE—Syndicate c/o Joseph P. Blitz, 1 E. 57 St., New York, Zone 22, 18 story office, Madison Ave. and 55 St. to be called Douras Bldg., $1,000,000.

▲ **O., Dayton** — ENGINEERING — University of Dayton, 300 College Park St., plans by Freeman A. Pretzinger, Reibold Bldg., 3 and 4 story chemistry and chemical engineering bldg. $1,000,000. CD 10/24/49.

▲ **Tex., Abilene**—HOSPITAL—St. Ann's Hospital Foundation, Abilene, plans by Tucker & Lindberg, 155 Adar St., Abilene, Tex., and Ellerbe & Co., E-1st. Natl. Bank Bldg., St. Paul, Minn. hospital. $1,500,000. CD 6/15.

▲ **Tex., Fort North**—SHOPPING CENTER—Fair-Westcliff Co., L. H. Brown, Jr., c/o The Fair, Fort Worth, plans by J. H. Williams & Co., c/o owner, 2 story, brick, tile, structural steel shopping center, $1,000,000; shopping area hard type paving and auto parking center, $75,000, Alton Rd. and S. Hills Ave.

▲ **Tex., Longview**—OFFICE—Longview Building Corp., Longview, plans by Wyatt C. Hedrick, archt.-consult. engr., 904 Fort Worth Ave., Dallas, 8 story mostly aluminum and glass type constr. office bldg., Green and Whaley Sts. $1,250,000.

▲ **Tex., San Antonio**—SHOPPING CENTER—Private, c/o Logan & Arnold, South Texas Bldg., shopping center, 47-acre tract, Vance Jackson Rd. $6,000,000.

▲ **Ont., Ottawa**—SEMINARY—Owner, c/o A. Martineau, archt., 200 Bay St., seminary in Twp. of Gloucester, near here, $1,000,000.

INDUSTRIAL BUILDINGS

▲ **Calif., Oakland**—PLANT—Liquid Carbonic Corp., 236 Steuart St., San Francisco, mfg. plant, Embarcadero between 9 and 10 Aves. $2,000,000.

▲ **O., Columbus**—WAREHOUSE—The Kroger Co., 1240 State St., Cincinnati, 1 story, 280,000 sq. ft. warehouse to service 85 stores in Columbus Area. $2,500,000.

▲ **S. C., North Charleston (Br. Charleston)**—PLANT—West Virginia Pulp & Paper Co., North Charleston, expansion existing plant for production of surface liner board. $10,000,000.

▲ **Tex., San Antonio**—PLANT, etc.—American Potash & Chemical Corp., 3030 W. 6 St., Los Angeles, Calif., chemical processing main plant, $6,500,000; storage or warehousing, $200,000; machinery & equip. repair shop $225,000; water sys., $40,000; sanitary-storm sewerage sys., $70,000; plant and area outside lighting sys. $65,000; grading, general earthwork in 190-acre plant tract $75,000, 10 mi. N.E. of here, between Nacogdoches and Wetmore Roads.

▲ **Ont., London** — PARKING — Covent Garden Parking Building, W. E. Mara, 1006 Maitland St., 13 story, steel, concrete parking bldg., Market St. with stores on ground floor, $1,500,000. S. G. Chipman & Co., 234 Dundas St., engrs.

▲ **Ont., Windsor**—GARAGE, etc.—Chrysler Corp. of Canada Ltd., 2450 Chrysler Centre, Windsor, plans by Wm. R. Souter & Assocs., 36 James St. S., Hamilton, part 1 and 2 story, 440x800 ft., rein.-con., steel, brick transport garage and experimental engineering bldg. $2,500,000. Norman Wagner, 42 James St. N., Hamilton, consult. engr.

UNCLASSIFIED

▲ **Pa., Phila.**—UTILITIES, BLDGS., etc.—City, City Hall, $54,630,000 bond election Nov. 2, bridges, paving, traffic controls and street lighting, $2,000,000, CD 2/3/47, under Bridges, CD 1/31/45, under Streets and Roads, and CD 11/24/44, under Unclassified; new lines and equipment for Phila. Gas Works, $10,000,000. water and sewerage systems, $26,500,000, CD 3/11/46, under Water Supply, CD 3/25/46 and CD 12/7/44 under Sewers, Waste Disposal. recreation centers, police and fire stations and other public buildings, $5,500,000, CD 11/24/44, 2/3/47, 10/21/54, under Unclassified, and CD 8/27, under Public Buildings.

▲ **Tex., Houston**—COUNTRY CLUB, etc.—Abe Jamail, 2612 Persa St., country club, $1,750,000; 18-hole golf course, $85,000; 10-acre lake with boating, dock and facilities. $75,000; park, recreation facilities, playgrounds, athletic courts, $60,000; rein.-con. outdoor swimming pool $90,000; lighting sys. (incl. lighting sys. for airplane landing field) $60,000 on Gulf Freeway about 3 mi. outside city limits.

▲ **Ont., Port Arthur**—RAILWAY YARD DEVELOPMENT—Canadian National Rys., Western Region, J. L. Charles, ch. engr., Winnipeg, Man., 50-acre railway yard development, incl. 4-lane highway between Port Arthur and Fort William, overpass over 600 ft. railway yard, new railway and vehicular traffic bridge over McIntyre River between Port Arthur and Fort William. Over $1,000,000. CD 10/16/46.

DECORATIVE

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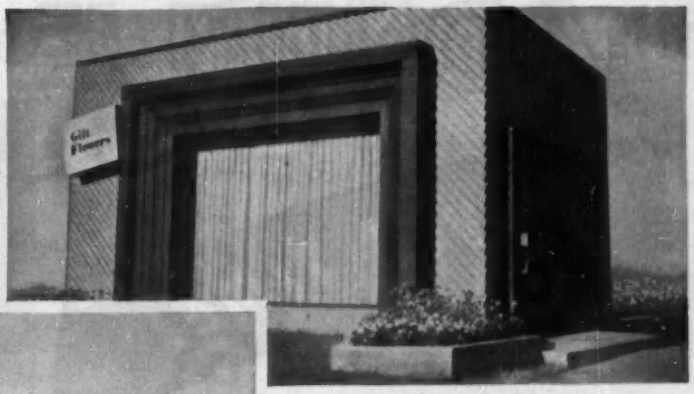
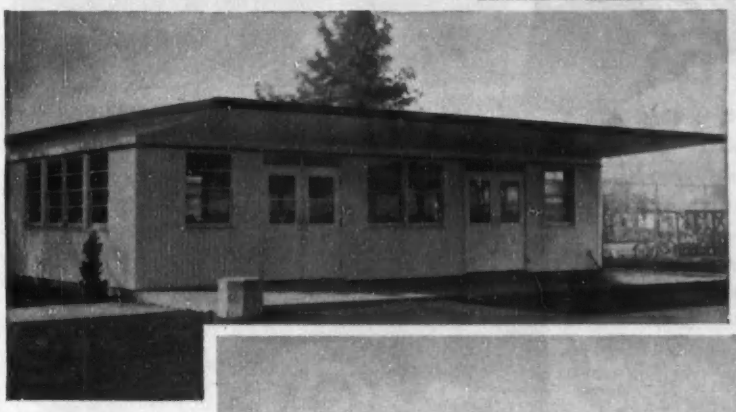
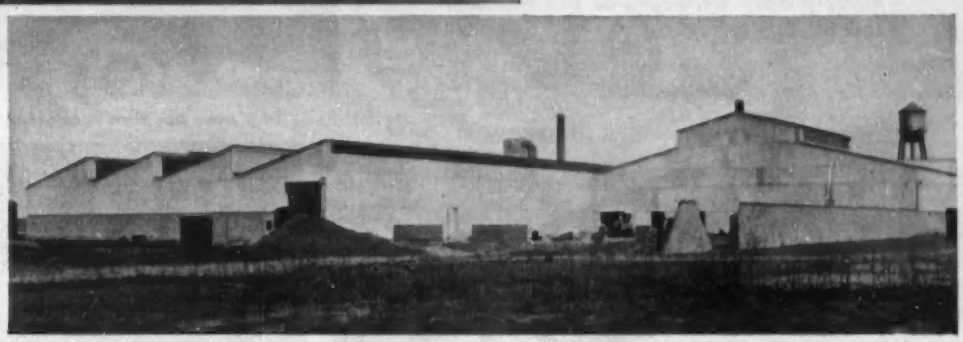




DURABLE

The rugged shell of this attractive bus terminal can shrug off a lot of abuse



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Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS

STREETS AND ROADS

November 16, 30 Massachusetts November 19 Vermont

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **MASSACHUSETTS**—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,
Gil Wyner Co., Inc., 12 Newland St., Malden, Mass. LB $2,623,674. hy. and bridges at Everett, U 342 (1). Bids Nov. 2. CD 10/5.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Gilbane Building Co.**, 90 Calverly St., Providence, R. I. CA Approx. $4,250,000. general contract BREWERY PLANT, NATICK, MASS. Carling's Brewery, Natick, Mass. Bids Oct. 26. CD 10/25.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS

BRIDGES

November 16 Maryland

STREETS AND ROADS

November 16, 18, 23 Maryland November 18 New York

BIDS ASKED—BUILDINGS

▲ **Pa., Phila.**—HIGH SCHOOL—BA 11/19—Bd. Educ., 21 and Winter Sts., Senior High School and athletic field, Cottman St., Algon St., etc. $6,000,000 Extended date. The Ballinger Co., 121 N. Broad St., archt. CD 9/9.

▲ **N. Y., Flushing**—HIGH SCHOOL—BA 11/30—Bd. Educ., Bureau Constr., 42-15 Crescent St., Long Island City, Zone 1, Junior High School 185, 25 Dr., 149 St., 26 Ave. and 147 St. $2,193,000. Plans deposit $36.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **NEW YORK**—Bureau Contracts & Accounts, The Governor Alfred E. Smith State Office Bldgs., Albany,
Manhattan Water Works, Inc., 1312 Randall Ave., New York 59, N. Y., LB $474,884, est. $512,000, 0.49 mi. New York State Thruway-New England Sect. Sub. 2 (North Ave. Drain). FANETC. 54-2, Westchester Co.;
Rusciano & Son Corp. & Del. Balso Constr. Corp., 728 E. 212 St., New York 67, N. Y., LB $6,409,804, est. $6,910,000. 2.95 mi. New England State Thruway-New England Sect. Subd. 6 (Cont. No. 1), FANETC. 54-4, Bronx Co.;
Shanahan Constr. Co., Inc., 109 Canal St., Ellenville, N. Y. LB $209,970, est. $249,000, 1.85 mi. Haverstraw-West Haverstraw, SH. 5389, Tompkins Cove-West Haverstraw, SH 8049, R.C. 54-104, Rockland Co.;
Herbert F. Darling, 131 California Dr., Williamsville, N. Y., LB $1,123,662, est. $1,174,000, 0.32 mi. Hy., 0.3 mi. Acc. City of Lockport: Genesee St.-Walnut St., FAC. 54-10, Niagara Co.;
The Arthur A. Johnson Corp. & MacLean-Grove Co., Inc., 347 Madison Ave., New York 17, N. Y., LB $12,359,414, est. $14,252,000, 2.83 mi. Thy., 3.85 mi. Acc., New York State Thruway-New England Sect.-Sub. 2 (Kings Hy. to Chatsworth Ave.) and local and access roads). FANETC. 54-7. NETC. 54-8. NET. 54-9, Westchester Co.;
Thomas F. Coluccio & Sons, Inc., 228 S. Washington St., Rome, N. Y., LB $165,163, est. $202,000, 0.64 mi. City of Oneida-North-South Art. Hy. (No. Main St.). FAC. 54-14, Madison Co.;
Mount Vernon Contg. Corp. & Wosstroff & Oliver, 439 N. Terrace Ave., Mount Vernon, N. Y., LB $2,680,102, est. $3,163,000, 1.25 mi. Hy., 1.26 mi. Acc., New York State Thruway-New England Sect.-Subs. 1 and 2A (N. Y. City line to Kings Hy.) and local and access roads, FANET. 54-6. FANETC. 54-5, Westchester Co.;
H. F. Stimm, Inc., Ellicott Square, Buffalo, N. Y., LB $274,712, est. $361,000. 0.19 mi. Ridge Rd., C. R. 101, FASS. 54-16, Erie Co. Bids Oct. 28. CD 10/5.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Kalman Klein & David Teicholz**, 2050 Lakeville Rd., New Hyde Park, N. Y. Owner Builds. $6,500,000. 230 HOUSES, 110-acre tract near Hempstead Harbor, east of Glen Cove Rd., EAST HILLS, N. Y.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS

BRIDGES

November 17 Kentucky, Virginia
November 30 West Virginia

STREETS AND ROADS

November 17 Kentucky, Virginia
November 24 Louisiana

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **NORTH CAROLINA**—State Hy. & P. Wks. Comn., Raleigh,
Sanford Constr. Co., Sanford, N. C. and **J. K. Cecil & Son**, Box 169, Lexington, N. C., CA $2,693,838. est. $3,000,000. East-West Expressway, Winston-Salem, Proj. 7476, Forsyth Co. Bids Oct. 26. CD 11/1, under LB.

▲ **FLORIDA**—State Road Dpt., Tallahassee,
Hardaway Constr. Co., Box 1369, Columbus, Ga., CA, $2,600,215, 13,770.5 ft. long bridge across Old Tampa Bay, between Tampa and St. Petersburg, State Road 600, Job 1013-108, Hillsborough Co. Bids Sept. 30. CD 10/6, under LB.

▲ **LOUISIANA**—State Hy Dpt., Highway Office Bldg., Baton Rouge,
Boh Bros. Constr. Co., 2400 Cypress St., New Orleans, La., LB $4,333,547. Industrial Canal Bridge over Inner Harbor-Navigation Canal at North Claiborne Ave. in New Orleans, State Rte. 1, S. P. No. 46-02-02, Orleans Parish. Bids Nov. 3. CD 9/30.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Tower Constr. Co.**, 1726 "L" St. N. W. Wash., D. C., Owner Builds. $2,000,000. Bradley SHOPPING CENTER, Center St. at King St. and Bradley Rd., ALEXANDRIA, VA. CD 9/30.

▲ **Daly & Mott**, Hulbert Ave., Erlanger, Ky. Owner Builds. $1,980,000. 120 bsmnt. and bsmntless brick veneer HOMES, Hulbert Ave., ERLANGER, KY. Hermes & Colucci, 717 Grand Ave., Cincinnati, O., archts. James Vlox, Jr., 22 Erlanger St., Erlanger, Ky., engr. Awarded Nov. 1.

MIDDLE WEST

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS

BRIDGES

November 16 Illinois November 17 Michigan
November 23 Wisconsin

STREETS AND ROADS

November 16 Illinois November 16, 17 Michigan

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **INDIANA**—Indiana Toll Road Comn., 309 W. Washington St., Old Trails Bldg., Indianapolis,
Tomlinson Constr. Co., 21 King St. E., Toronto, Ont., CA, $3,990,620. Contracts 22 and 23, 8.3 mi. La Porte Co. for Indiana-East-West Toll Road, Bids Oct. 6, awarded Oct. 20. CD 10/8, under LB.

▲ **INDIANA**—Indiana Toll Road Comn., 309 W. Washington St., Old Trails Bldg., Indianapolis, Zone 4,
R. D. Smalley & Son, Celina, O., LB, $2,863,320. Contracts C-26-C-27, for Indiana East-West Road in St. Joseph Co. Bids Oct. 20. CD 9/27.

▲† **Ring Constr. Corp.**, 721 Metropolitan Bldg., Minneapolis, Minn., CA, $6,566,020, permanent type 250-500-bed 5 story hospital and dental clinic, etc. Serial No. 110-32-55-5, SCOTT AIR FORCE BASE, ILL. U. S. Eng., 475 Merchandise Mart, Chicago 54, Ill. Bids Aug. 27. CD 9/8, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Howard S. Young**, 2605 Edgewood Rd., Cleveland Heights, O. Owner Builds. $1,750,000. 42 frame HOUSES, Fairmount Blvd., Green Rd., Beachwood, CLEVELAND HEIGHTS, O.

▲ **Robert Hanson**, 109 S. York St., Elmhurst, Ill., Own Forces, $1,800,000. 75 HOMES, west of ELMHERST, ILL.

▲ **Marconi Constr. Co.**, 2925 Mainheim Rd., Franklin Park, Ill. Own Forces, $3,000,000. APARTMENT, HOTEL and STORES, PARK RIDGE, ILL. Stade & Cooley, 532 Busse Hy., Park Ridge, archts.

▲ **Calvin Homes, Inc.**, Dearborn Real Estate Co., 24432 Michigan Ave., Dearborn, Mich. Owner Builds. $3,700,000. 360 single frame HOUSES (Ranchette), Telegraph, M-112, Ecorse and Pelham Rd., DEARBORN, MICH.

▲ **Christman Co.**, 408 Kalamazoo Plaza, Lansing, Mich. LB $3,188,143. general contract;
C. L. Mahoney Co., 438 Forest St., Lansing, Mich. LB $738,750. mechanical contract;
Barker-Fowler Co., 116 E. Ottawa St., Lansing, Mich. LB $379,748. electrical contract, steel aluminum and glass CITY HALL and POLICE STATION, LANSING, MICH. City, Millie Brown, city clk., Lansing, Mich. Bids Oct. 25. CD 9/15.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS

BRIDGES

November 16 Iowa, Kansas November 23, 24 Texas

STREETS AND ROADS

November 16 Iowa November 16, 18 Kansas
November 23, 24 Texas

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **J. W. Bateson Co.**, Irwin-Keasler Bldg., Dallas, Tex. LB $2,471,308, est. $2,568,627, warehousing in Area A at Tinker Field, ENG-34-066-55-15, OKLAHOMA CITY, OKLA. U. S. Eng., Box 61, Tulsa 2, Okla. Bids Oct. 28. CD 10/6.

▲ † **Farnsworth & Chambers Co., Inc.**, Box 74, Houston, Tex., CA $1,810,984, four 3 story, 39x266 ft. dormitories two 2 story, 41x245 ft. officers quarters; one 39x170 ft. admin. bldg.; one 54x126 ft. mess hall, all concrete frame, masonry constr. Inv. No. ENG-41-243-55-24, KELLY AIR FORCE BASE, TEX. U. S. Eng., Box 1229, Galveston, Tex. Bids Oct. 28. CD 10/12.

▲† **Robert E. McKee**, 1918 Texas St., El Paso, Tex., CA $2,797,700, est. $2,960,534, engine training cells, Shepherd Air Force Base, ENG-34-066-55-13, WICHITA FALLS, TEX. U. S. Eng., Box 61, Tulsa 2, Okla. Bids Oct. 21, awarded Oct. 28. CD 10/26, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Key Builders, Inc.**, Belton, Mo. Owner Builds. $8,000,000. 800 HOUSE DEVELOPMENT, Lacey Estates, BELTON, MO.

▲ **Milistone Constr. Co., Inc.**, 8510 Eager Rd., St. Louis 19, Mo. CA $4,473,200. general contract;
Gartland Co., Inc., 2112 Big Bend Blvd., St. Louis 17, Mo. CA $689,700. plumbing contract;
Corrigan Co., 2525 K St. Louis Ave., St. Louis 6, Mo. CA $829,481. heating contract for 660 HOUSING units in four 9 story bldgs. in area bounded by Carr, 18, 20 and O'Fallon Sts., Phase No. 1 of Mo.-1-6, ST. LOUIS, MO. St. Louis Housing Auth., John J. O'Toole, exec. dir., 901 Washington 1, Mo. CD 10/5, under LB.

▲† **R. F. Ball Constr. Co.**, 1430 E. Houston St., San Antonio, Tex., CA $3,326,123. BARRACKS, ENG-41-443-55-25, FORT HOOD, TEX. U. S. Eng., 100 W. Vickery Blvd., Fort Worth, Tex. Bids Oct. 26. CD 10/29, under LB.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS

BRIDGES

December 2 California & Arizona

STREETS AND ROADS

November 18 Nevada November 24, 26 California

▲ **Wash., Seattle**—BA 12/1—City, County-City Bldg., Zone 4, high dam at Gorge on Skagit River. $17,000,000. P. J. Raver, city light supt. Extended date. CD 10/6.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **CALIFORNIA**—State Div. Hys., 120 S. Spring St. Los Angeles,
Winston Brothers Co., 1532 S. California Ave. Monrovia, Calif., LB, $2,812,322, grading 4.2 mi., 7 bridges on Ramona Freeway, West Covina, Los Angeles Co.;
KEC Co., Inc., 5636 Peabody St., Long Beach, Calif., LB, $73,507. roadside area planting 1.8 mi. Hollywood Freeway, Los Angeles Co. Bids Oct. 21. CD 9/30.

BUILDINGS

LOW BIDS AND CONTRACTS

▲† **Wick Constr. Co. & Dahlgren Constr. Co.**, 720 N. 35 St., Seattle, Wash., CA, $3,983,992, est. $3,967,438 10 rein.-con., masonry 263-man BARRACKS STEAM HEATING PLANT storm and sanitary sewers, water electric steam distr., sidewalks, curbs, etc., ENG-45-108-55-42, FORT LEWIS, WASH. U. S. Eng., 4735 E. Marginal Way, Seattle 4, Wash. Bids Oct. 26. CD 10/29, under LB.

▲ **Green Vale Homes, Inc.**, 930 East Arques Rd., Sunnyvale, Calif., CA, $6,500,000. 726 HOMES, Reed Lane and Bowers Ave., SUNNYVALE, CALIF. Western Projects Corp., 387 Grad Ave., Oakland, Calif. Awarded Oct. 15.

CANADA

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Municipality**, City Hall, Edmonton, Alta., rejected bids Oct. 13, 9 story, concrete, steel, brick, stone CITY HALL, EDMONTON, ALTA. CA, est. $2,000,000. CD 10/28, under CA.

▲ **B. Perini & Sons (Canada) Ltd.**, 49 Jackes Ave., Toronto, Ont., LB, $9,377,000, 10 story, POST OFFICE, Graham Ave., WINNIPEG, MAN. Dpt. P. Wks., Hunter Bldg., Ottawa, Ont. Bids Oct. 27. CD 9/17.

▲ **Louis G. Fortin Constr. Ltd.**, 45 Marquet St., Eastview, Ont., CA, $6,000,000, 500 HOUSING UNITS, Chemin Brickyard, HULL, QUE. Louis Gendron, c/o contractor.

(Proposal Advertisements see pp. 76 to 78)

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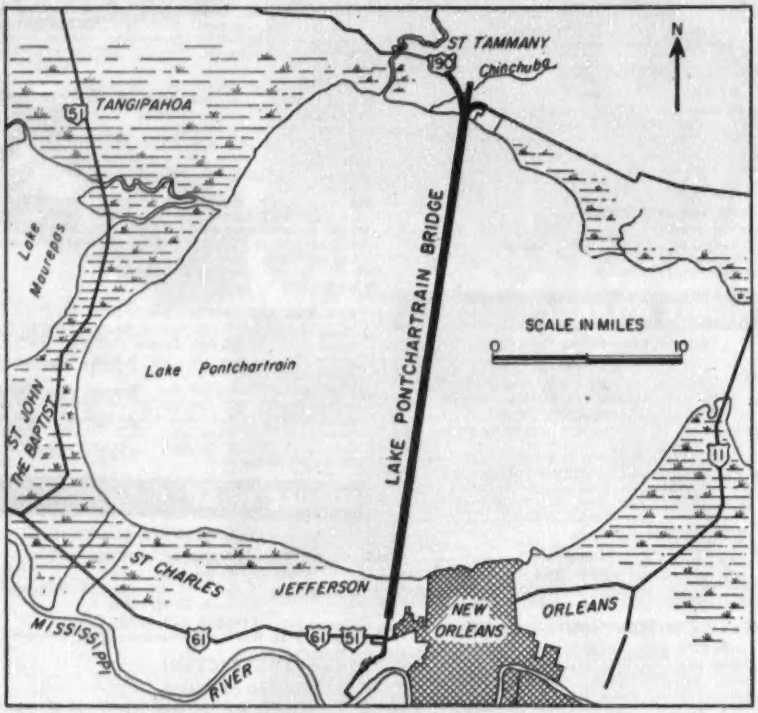


WORLD'S LONGEST BRIDGE, crossing Lake Pontchartrain north of New Orleans, will be primarily of trestle type, with prestressed concrete piles and deck.

New Orleans Expressway $30.7-million contract

Louisiana Bridge Company, low bidder of four, is constructing the $30.7-million Greater New Orleans Expressway project offered jointly by the parishes of Jefferson and St. Tammany, La. Second-low bid was $34.4 million, 12% higher.

The contract is divided into three parts: north approaches, south approaches, and bridge.

Lake Pontchartrain Bridge will be the longest in the world, extending from the south bank of Lake Pontchartrain in Jefferson Parish 23.8 mi to the north bank in St. Tammany Parish. It will have a two-lane 28-ft vehicular roadway. This makes 3,523,000 sq ft of deck space at a cost of $7.83 per sq ft for the bridge. Second-low bid on the bridge comes to $.83 per sq ft of deck.

Twenty months are allowed for building the bridge.

Palmer & Baker Inc. of New Orleans, consulting engineers, included in the bridge specifications three alternate superstructure and two substructure designs. Lowest-price designs were chosen.

The bridge consists of trestle spans for most of its length. Unit of deck construction is a 56-ft prestressed span, slab and stringers to be cast monolithically. Foundation bents have two 54-in. prestressed cylindrical hollow piles, driven plumb. Three raised humps in the bridge and two double-leaf bascule bridges provide clearance for small and large craft.

The bascule bridge piers will bear on 24-in. square precast concrete piles and the movable span will be of riveted construction with open-deck floor, electric-motor operated.

At each end of the bridge there will be an administration building, a garage, and toll collection booths.

There are 17½ mi of approach roads, consisting of two 2-lane express roadways separated by raised median strips.

The south approach, 2.8 mi long, includes grade intersections at 13 streets. Twin reinforced concrete bridges are at each of three canal crossings, are supported on precast reinforced concrete piles.

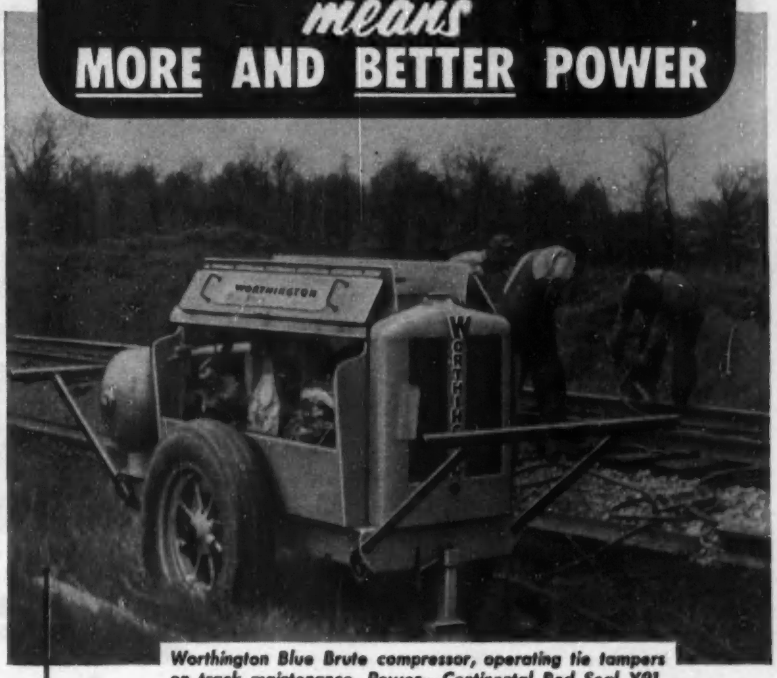
Three approach roads to the north toll plaza of the Lake Pontchartrain Bridge add to 14.8 mi. The north (2.7 mi) and west (5.9 mi) branches cross Bayou Chinchuba on reinforced concrete bridges.

Wage rates in the New Orleans area range from $2.85 per hour for structural ironworkers to $1.425 for common labor. Water transportation will be used almost exclusively on the project. Bidders include:

1C Louisiana Bridge Co. (T. L. James Co., Kenner, La. and Brown & Root, Inc., Houston, Tex.) $30,677,210
2 Merritt-Chapman & Scott Corp., New York, N. Y. 34,417,500
4 J. A. Jones Constr. Co., et al, New Orleans, La. 41,404,223

Bids: 6-23-54 Item	Unit	Quantity	Unit Prices 1 C	2
South shore approaches 1C $2,043,937				
Clearing	ac	80.25	$100.00	$110.00
Grubbing	ac	20.10	200.00	250.00
Exc, rdway: road to canal	cy	24,774	0.50	0.85
canal—levee	cy	182,305	1.00	0.48
water mn & bkfl	cy	2,510	1.00	2.25
borrow	cy	356,500	1.80	1.99
Steel sheet piles	lb	262,200	0.10	0.14
Sand dr rins	sf	35,412	2.50	1.25
bl inket	cy	10,541	3.50	4.67
Exist MH gr adjust, water	ea	5	25.00	185.00
sanitary	ea	4	50.00	185.00
Vlv & gate bx gr adjust	ea	5	25.00	123.00
Sand-shell base crse 8"	sy	89,776	2.50	1.54
surf crse 6"	sy	21,950	2.25	1.28
Bit ct CM culv P 18"	lf	414	5.00	7.10
RCCP 15"	lf	542	5.00	5.24
18"	lf	1,428	5.50	7.73
24"	lf	1,304	7.50	10.73
30"	lf	1,045	8.50	14.20
36"	lf	2,613	11.00	18.34
42"	lf	3,259	13.00	22.50
48"	lf	5,681	26.00	26.15
Manholes	ea	13	450.00	613.00
Drop inlets 1	ea	33	450.00	346.00
2	ea	40	400.00	244.00
3	ea	4	350.00	453.00
Headwall concrete	cy	13.76	75.00	91.43
reinf steel	lb	922	0.20	0.143
Creosoted timber	Mfbm	1.52	400.00	358.00
Curb	lf	28,063	1.25	1.36
Gutter & curb	lf	1,210	3.00	1.65
Beam type guard rail	lf	50	6.00	4.19
Traffic control system	ls	1	26,000	19,500
sign & barrcde	ls	1	1,000	3,600
Tpsoil, fertil, seed	ac	12.75	50.00	490.00
Precast conc piles	lf	8,544	12.00	9.71
Bridge concrete	cy	1,207	68.00	83.65
reinf steel	lb	216,884	0.12	0.143
Railing	lf	1,144.46	6.00	7.46
Prime ct, interim pvmt	gal	25,140	0.25	0.19
Asphalt cement	gal	73,458	0.18	0.155
Aggregate, coarse	cy	1,632	6.00	8.96
fine	cy	806	6.00	8.96
seal coat	cy	612	6.00	8.96
Reconstruct base crse	sy	89,776	0.15	0.37
sand-shell	cy	7,500	8.00	2.63
Prime ct, perm pvmt	gal	25,450	0.20	0.19
Tack coat	gal	16,325	0.18	0.16
Asph conc binder crse	ton	6,122	7.00	11.85
surf crse	ton	4,081	8.00	11.85
North shore approaches 1C $1,033,273				
Clearing	ac	138	200.00	350.00
Grubbing	ac	100	200.00	577.00
Exc, common	cy	181,400	0.40	0.285
overhaul	stay	193,100	0.01	0.025
SS RCCP 15"	lf	513	3.50	6.61
18"	lf	1,212	4.00	7.98
24"	lf	670	5.00	11.11
30"	lf	45	8.00	14.75
42"	lf	210	15.00	23.54
ES RCCP 24"	lf	402	8.00	12.87
30"	lf	519	12.00	16.89
Drop inlets, ty 3	ea	10	300.00	453.00
Misc dr struct conc	cy	153.27	65.00	91.43
reinf stl	lb	13,389	0.12	0.143
Beam type guard rail	lf	2,276	4.50	4.19
Topsoil, fertil, seed	ac	49	50.00	490.00
Slab sod ditch paving	sy	6,980	3.00	1.76
Traffic signs	ea	50	50.00	18.08
Struct exc, bridge	cy	946	2.00	3.12
Precast conc piles	lf	4,834	12.00	9.71
Struct conc for bridge	cy	1,126.18	68.00	83.65
Slope prot conc	cy	357.62	30.00	49.20
& bri reinf stl	lb	271,534	0.12	0.143
Railing	lf	1,161.36	6.00	7.46
PCC pvmt 8"	sy	177,590	3.55	4.34
Integral curb	lf	60,175	0.50	0.76
Compacted base 6"	sy	2,060	1.00	1.89
Prime coat	gal	618	0.50	0.19
Bit surf treatment	sy	2,060	0.75	0.34
Lake Pontchartrain Bridge				
Lump Sum 1C & 2		$27,600,000		$31,115,887
Addnl piles, round	lf		7.50	12.55
square	lf		6.00	6.00

CONTINENTAL RED SEAL *means* MORE AND BETTER POWER



Worthington Blue Brute compressor, operating tie tampers on track maintenance. Power—Continental Red Seal Y91.

Continental Red Seal power for specialized applications is now available at levels ranging from 2 h.p. up to more than 1,000, in liquid-cooled and air-cooled models, for use on all standard fuels. And, strictly on the score of PERFORMANCE—economy, dependability and low maintenance cost—it is finding its way into more and more leading makes of specialized machines. The equipment builder's good name, and the end-user's satisfaction, are double-clinched by this fact: EVERY CONTINENTAL RED SEAL IS NOT ONLY BUILT FOR ITS JOB, BUT BACKED BY PARTS AND SERVICE FACILITIES COAST TO COAST.

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Continental also builds air-cooled models, from 2 to 3 h.p., for heavy-duty applications in industry and on the farm. They embody the exclusive Contex® external ignition system, greatest air-cooled engine advance in recent years. For information, address Air-Cooled Industrial Engine Division, 12800 Kercheval Ave., Detroit 15.

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1252 OAKLEIGH DRIVE, EAST POINT (ATLANTA) GA.

Continental Motors Corporation
MUSKEGON, MICHIGAN

Model 145 Dart Truck equipped with Allison TORQMATIC DRIVE being loaded at Sunnyhill Coal Company's New Lexington, Ohio, mine. Truck is one of 10 operated by Sunnyhill.

10 trucks replace 30 –cut costs 62%

WHEN 10 50-ton trucks equipped with Allison TORQMATIC DRIVES replaced 30 mechanical-drive 20- and 30-ton trucks at Sunnyhill Coal Company's New Lexington mine:

Operating costs dropped *18.6¢ per ton,*

Maintenance costs were cut *13.1¢ per ton,*

And the TORQMATIC*-equipped trucks now haul 32.6* more *tons per truck hour.*

But lower costs are only part of the story.

On-the-job accidents have dropped sharply. Drivers stay fresher, more alert because they now have no clutch pedal to push – quick-shift at full throttle with finger-tip hydraulic control—have only 3 shifts instead of 7 or 10.

Wet weather worries have almost disappeared—road maintenance costs are lower. Smooth power transmission by the Allison TORQMATIC DRIVES lets trucks drive through mud and muck—conditions that often shut down the mine before TORQMATIC-equipped units came on the job.

Big reason for lower operating and maintenance costs is shock-free power transmission by the *matched* TORQMATIC Converter-Transmission teams. The Converter absorbs shock loads instead of transmitting them along the drive line—protects engine, differential, drive shaft and transmission from damage.

There's an Allison TORQMATIC DRIVE for your 40- to 400-horsepower gasoline and Diesel equipment. New low-cost 40-150 h.p. TORQMATIC Converters easily fit present equipment, are completely self-contained for simple installation. Get full details about Allison TORQMATIC DRIVES from your equipment manufacturer or dealer or write:

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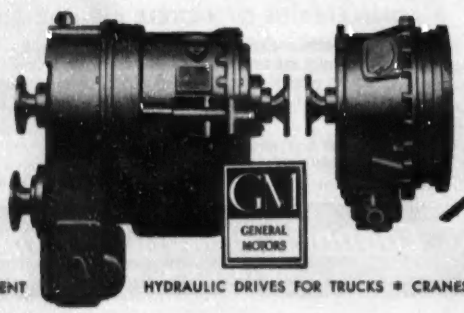
- **Reduces** maintenance costs by absorbing shock – eliminates engine lugging – prolongs equipment life
- **First** torque converter-transmission team designed to work as a *unit* and built by one manufacturer
- **Cuts** driver training costs

FIRST MATCHED UNITS BUILT BY ONE MANUFACTURER



Allison TORQMATIC DRIVES

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Capital Spending Will Stay High Next Year

McGraw-Hill survey shows that 1955 capital spending will be down only 5%, may not drop in 1956 and could even rise

This fall's customary early survey of industry's capital spending plans by the McGraw-Hill Economics Department has produced good news for construction men.

The survey shows that, after a year of "readjustment" U.S. industry has preliminary plans to spend only about 5% less for new plants and equipment in 1955 than in 1954. That's about $20.7 billion as compared with an estimated $21.8 billion this year (see Table I).

Moreover, the survey indicates that capital spending by manufacturing companies may level off in 1955, ending the decline that started late in 1953. A majority of manufacturing companies surveyed by McGraw-Hill now expect to invest as much in 1956 as in 1955, and about as many companies plan to increase capital spending in 1956 as plan to reduce it.

• **Optimistic**—Furthermore, U.S. businessmen are overwhelmingly optimistic about the sales outlook next year. In almost every industry, a strong majority of firms expects sales to climb in 1955. An atmosphere like this is good for construction.

The table shows that all major branches of U.S. business, except petroleum, now have preliminary plans for cutting back their capital spending. Manufacturers plan a cut of about 7%. Most other categories plan larger cuts. But the 1% gain scheduled for the important petroleum industry improves the overall showing.

Since many companies do not complete budget reviews until later in the year, these plans are preliminary. But McGraw-Hill economists believe from past experience that they are accurate indicators of trends in business capital spending. The more detailed McGraw-Hill survey will be made, as usual, early next year.

The figures do not include any breakdown between spending for plant and spending for equipment. However, the final survey next spring will include its customary division between spending for modernization and for expansion. That will shed some light on what proportion of this money can be expected to go into construction. In the recent past, industry has been concentrating more on modernizing existing plants rather than building new ones. And this trend is expected to continue for awhile.

• **Plant spending by 1959**—Capital spending estimates for the next five years recently made by Fortune magazine for the so-called "production" industries do show plant spending separately. Fortune figures that manufacturers of non-metal products may be spending 50% more on plant by 1959 than this year. The oil-and-gas industry and the electric utilities also will be spending substantially more on plant by 1959. However, the magazine expects a decline in the metalworking industries from $900 million this year to $700 million in 1959. Altogether, Fortune estimates that spending on plant will climb from $7.6 billion this year to $8.8 billion in 1959.

In any event a decrease in business capital spending and industrial building over the short-term future has a silver lining for the construction industry. It will help whet demand in the bond market for the enormous volume of financing required to finance our huge projected highway

(*Continued on page 70*)

Table I—Industry's Plans for Capital Spending in 1955

Industry	1953 Actual	1954 Estimated	1955 Planned	% change 1954-1955
	Millions of dollars			
All manufacturing	$10,026	$9,249	$8,598	−7
Petroleum	4,600	4,875	4,920	+1
Mining	506	380	311	−18
Railroads	1,312	851	769	−10
Other transport & communications	2,594	2,922	2,640	−10
Utilities	4,548	4,274	4,206[1]	−2
All industry	**$23,271**	**$21,784**	**$20,727**	**−5**

Data: Dept. of Commerce; Chase Nat'l Bank; McGraw-Hill Economics Dept.
[1] Electrical World, American Gas Assn.

Table II—Manufacturers' Capital Spending Plans

Industry	1953 Actual	1954 Estimated	1955 Planned	% chg 1954-1955
Primary metals	**$1,634**	**$1,134**	**$1,145**	**+ 1**
Iron & steel	1,189	830	805	− 3
Non-ferrous	445	304	340	+12
Metalworking	**2,942**	**3,235**	**2,683**	**−17**
Machinery	803	694	688	− 1
Elec. machinery	481	461	431	− 6
Autos	1,000	1,350	811	−40
Transport	168	160	132	−17
Other metalworking	490	570	621	+ 9
Chemical processing	**3,162**	**3,011**	**2,943**	**− 2**
Chemicals	1,559	1,328	1,269	− 4
Paper	431	448	423	− 6
Rubber	158	133	121	− 9
Stone, clay, glass	339	335	413	+23
Oil refining	675	767	717	− 7
Food & beverages	**818**	**764**	**686**	**−10**
Food	525	499	548	+10
Beverages	293	265	138	−48
Textiles	**351**	**290**	**288**	**− 1**
Miscellaneous manufacturing	**1,119**	**815**	**853**	**+ 5**
All manufacturing	**10,026**	**9,249**	**8,598**	**− 7**

Table III—Other Industries' Capital Spending Plans

Industry	1953 Actual	1954 Estimated	1955 Planned	% chg 1954-1955
Petroleum	**$4,600**	**$4,875**	**$4,920**	**+ 1**
Production	3,100	3,261	3,473	+ 7
Transportation	450	391	285	−27
Refining	675	767	717	− 7
Marketing	325	374	375	0
Other	50	82	70	−15
Mining	**506**	**380**	**311**	**−18**
Coal	264	204	121	−40
Iron ore[1]	74	61	53	−13
Non-ferrous	115	73	85	+17
Non-metallic	53	42	52	+24
Railroads	**1,312**	**851**	**769**	**−10**
Other transport & communications	**2,954**	**2,922**	**2,640**	**−10**
Utilities	**4,548**	**4,274**	**4,206[2]**	**− 2**

[1] Excludes taconite
[2] Electrical World; American Gas Assn.

and school construction programs. And it will help keep a strong market for home mortgages. Investors who would otherwise have bought corporate bonds will be attracted by municipals and mortgages.

• **Wide variations**—If you look at further details of spending plans (Tables II and III), you can see wide variations between various industries, not shown in the major groupings of Table I.

For instance, the declines expected in capital spending by steel companies are more than offset by bigger plans of non-ferrous metal producers. There is a very sharp decline expected for auto companies, but companies in the "other metalworking" group (including instruments, fabricated metal products, and ordnance) plan higher spending. That goes, too, for processors of stone, clay, and glass, and for food processors.

The "miscellaneous" group which includes lumber, apparel, furniture and others, is also up.

Also, increases are expected in spending for petroleum refineries and mining of non-ferrous and non-metallic lines.

Furthermore, in a limited sampling that was made by McGraw-Hill of major chain and department stores indicates substantial boosts in capital spending in 1955. The sample was small, and is not included in these figures.

• **Leveling off**—Indications are that capital spending will not keep going down in 1956. About 55% of firms throughout industry expect to spend about as much in 1956 as in 1955, and 21% expect to spend more. Past surveys have indicated that companies are inclined to underestimate their capital spending for more than one year ahead. So actual capital spending in 1956 may be higher than in 1955.

Blaw-Knox Builds New Plant To Increase Its Capacity

Blaw-Knox Co., of Pittsburgh, is convinced that there will be a substantial increase in highway construction before long, and is getting ready to handle it.

W. Cordes Snyder, Jr., Blaw-Knox president, announced last week that his company will build a new plant at Mattoon, Ill., which will make its full line of roadbuilding equipment. The plant will combine three widely scattered plants and increase capacity. At Mattoon, the plant will be about equidistant from St. Louis and Chicago.

Said Snyder: "Whether Congress approves the President's proposed $50-billion highway program, or whether road building expansion develops from critical need, the pressing demand for additional highways cannot long be postponed."

The Blaw-Knox executive has plenty of backing for his opinion. For instance, a recent report prepared for the American Automobile Assn. estimated that 81,000,000 motor vehicles would be on U.S. roads by 1965. There are about 59,000,000 on the roads now.

Buying Equipment

Materials-handling firm offers new, flexible plan

In today's competitive capital-goods market, financing plans by manufacturers are continuing to spread. Last week, a materials-handling manufacturer announced a "6-way procurement plan" which might have some implications for construction equipment manufacturers.

The manufacturer is Lewis-Shepard Products, Inc., of Watertown, Mass. This company now offers the following methods in its new plan:

- Leases (with or without an option to purchase) from three to five years, both on the basis of declining monthly rentals and also on an equal rental basis.
- Time payments, in equal monthly installments, and with 25% down. Terms are usually from one to three years, but special arrangements are available up to eight years. The charge is the usual finance-company rate of ½% per month on the original unpaid balance, which works out to an actual interest cost of more than 11% annually.
- Short-term rentals for peak periods.
- Trial use of equipment to see which model is best for the buyer in his particular job.
- Trade-in allowances on Lewis-Shepard equipment and on other competitive equipment. Lewis-Shepard equipment taken in trade usually is rebuilt and resold.
- And, of course, the outright purchase plan.

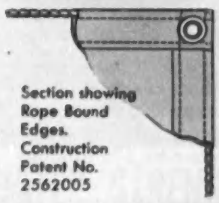
• **It can make money**—Financing by the manufacturer can not only increase his sales, but it can make money. That point was brought clearly last week at the annual finance conference which was held by the American Management Assn.

C. R. Brogan, vice-president of Refrigeration Discount Corp., subsidiary of American Motors Corp., told the conference that his financing subsidiary has made money in every one of the 28 years that it has been doing business.

Redisco used to be a subsidiary of Nash-Kelvinator Corp. before it merged with Hudson.

Brogan also pointed out that a finance subsidiary can give dealers help on avoiding bad credit risks, and can supply advice on budgeting, record keeping, inventory control, and insurance coverage.

Tarpaulins don't cost . . . they pay! Damage to equipment and building materials along with waste of labor time can mean the difference between profit and loss. Protect your investment with Wenzel tarpaulins and windbreaks . . . the only tarps that give you extra strength at no extra cost. Wenzel Tarpaulins and Windbreaks have heavy duty rope bound in hem all around edges . . . makes tarps stronger . . . prevents rips and tears from starting . . . grommets won't pull out. You get better protection with the three famous Wenzel Brand Tarpaulins.



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COMMENT
from the
BUTLER ENGINEER
. . . Of Ready Mix Out In The Sticks

There seems to be no discernibie limit to the Ready Mixed field. I remember 20 years ago when all of us at Butler Bin were greatly concerned because we felt that the saturation point for Ready Mixed Plants was just ahead . . . Like the head of the U. S. Patent Office back somewhere about the 1870's who advocated its liquidation because we had attained the limit of development and there could be nothing patentable in the future.

Now the Ready Mixed market is growing in small communities . . . and I mean country towns that are really country. Farmers are turning toward concrete for many things . . . feed lots, foundations, open pit silos and driveways — as just a few samples.

The financial success of a number of Ready Mixed operations in small towns is startling. There's big money to be made where you are the nearest and only source for concrete . . . We suggest to present plant owners in larger towns and to those who are contemplating the establishment of a Ready Mix business that they look into the possibilities of branch plants in the Alfalfa Corners of this country. Flexibility in shifting trucks, reducing hauling distances — all at virtually no increase in overhead — make branch operations attractive. And prices for concrete are very interesting.

Fellow I know in the East is a great lover of music and gals. Recently he bought a complete installation of very costly high fidelity sound equipment for his collection of recordings. When I saw him recently he commented on it. Another friend who was in the conversation said,

"Yeah. Bill's gone from infidelity to high fidelity."

The Butler Engineer

BUTLER BIN COMPANY
WAUKESHA, WISCONSIN

BUSINESS AND FINANCE

Business Briefs . . .

• **Harnischfeger Expands**—Harnischfeger Corp., Milwaukee, has acquired patent and manufacturing rights to the Sierra Loader from C & D Manufacturing Co., of Sacramento, Calif. The new item is a tractor-drawn elevating loader.

• **Thew acquires Dixie**—Thew Shovel Co., of Lorain, Ohio, has bought stock control of Dixie Crane & Shovel Co., Inc., Harrisburg, Pa. According to Thew's President C. B. Smythe, the move was made in order to extend Thew's operations into the low-cost excavator field.

• **Dorr-Oliver merger**—Dorr Co., Stamford (Conn.) engineering firm, and Oliver United Filters, of Oakland, Calif., plan a merger through an exchange of stock. Edwin L. Oliver, board chairman and president of Oliver, and John V. Dorr, board chairman of Dorr, will be co-chairmen of the new company. J. H. Hitch, Jr., Dorr president, will continue as president.

• **Building materials continue rise**—Prices of building materials climbed in October for the fourth consecutive month, according to the Bureau of Labor Statistics. The index for October is 1.4% above a year ago, and 2.7% above the 1954 low which was reached in June.

• **Florida utilities expand**—Florida Power Corp., St. Petersburg, and Florida Power & Light Co., have just sold a total of $22 million in bonds to finance construction. FP&L now plans to spend $410 million over the next 10 years, having just boosted this objective by $75 million.

• **Fabricated structural steel**—Bookings were up in September over August but shipments were down. For the first nine months, bookings are 15% behind last year. Shipments are 6% ahead of last year. The order backlog —1,328,604 tons—is 35% below last year.

• **Philadelphia** plans a $100-million wholesale food distribution center which will be located in South Philadelphia. The new center will service dealers in the metropolitan area.

• **B. F. Goodrich Co.** plans to spend $100 million of capital spending in the next five years, mostly to expand tubeless tire production.

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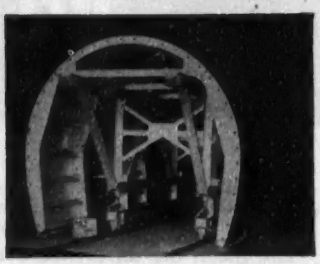

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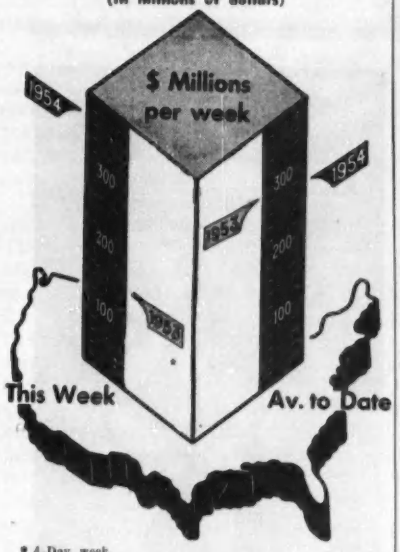
Activity This Week

As reported to ENR
(In millions of dollars)



• 4-Day week

Amount of contracts let

	This Week	Cumulative 45 wks 1954	Cumulative 45 wks 1953	% chge
Federal	$57.9	$1,117.2	$1,274.5	−12
State and municipal	152.3	4,346.2	4,324.4	+1
Total public	210.2	5,463.4	5,598.9	−2
Total private	161.3	7,019.2	7,419.5	−5
U. S. total	$371.5	$12,482.6	$13,018.4	−4

Contracts by type of work

Waterworks	$9.2	$212.1	$204.9	+4
Sewerage	22.1	348.6	376.7	−7
Bridges	28.7	449.8	601.0	−25
Highways	45.9	1,667.1	1,545.5	+8
Earthwork, waterways	4.2	278.7	318.7	−13
Buildings:				
Public, excl. hsg.	41.9	1,516.0	1,478.5	+3
Housg., public	31.2	232.0	346.4	−33
Housg., private	102.8	3,697.5	3,091.8	+20
Commercial	25.3	1,185.0	1,019.5	+16
Industrial	25.3	1,617.8	2,488.5	−35
Unclassified	34.9	1,278.0	1,546.9	−17
Total	$371.5	$12,482.6	$13,018.4	−4

NOTE: Minimum size projects included are: Waterworks and waterways, $34,000; other public works, $60,000; industrial buildings, $82,000; other buildings, $300,000.

New capital for construction

(millions of dollars)

	Week of Nov. 4 1954	Cumulative 44 Wks 1954	% chge '53-'54
Corporate securities	$19.4	$2,463.5	−34
State and municipal:			
All except housing	267.2	4,717.3	+31
Housing	...	91.0	−65
Federal loans	3.4	104.7	+4
Federal aid	...	673.0	−13
Total non-federal	$289.9	$8,049.1	−5
Federal appropriations:			
In U. S.	...	$2,073.3	+32
Outside U. S.	...	33.2	+15
Total new capital	$289.9	$10,156.0	+1

ENR cost and volume indexes, 1954

		Base years = 100 1913	1926	1949
Construction cost	11/4	642.79	308.99	134.75
	10/28†	643.02	309.10	134.80
Building cost	11/4	456.11	246.56	129.65
	10/28†	456.34	246.68	129.72
Volume	Oct.	423	172	122
	Sept.	503	204	145

† Official ENR monthly index for Nov.

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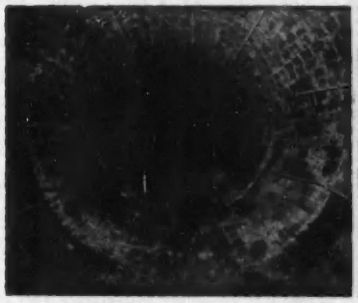

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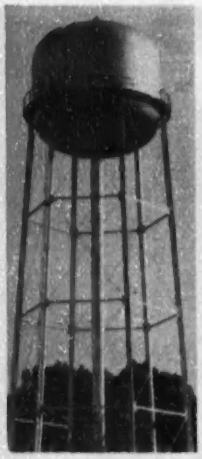

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AFL'S GEORGE MEANY shares ticklish job with . . .

CIO'S WALTER REUTHER in building new "house of labor."

Labor Unity Due—but With Arguments

Building trades unions—already unhappy with "no-raid" agreement—promise trouble if AFL-CIO are wed

Al Adams
Washington Staff

The AFL Building Trades Department last week signalled its dissatisfaction with the AFL-CIO no-raiding pact—the agreement both federations heralded as the underpinning to a proposed new "house of labor" that would combine their 145 labor unions into a single association of 15 million workers.

The two organizations already are drafting a new constitution for a "single trade union center." The goal for merger is set for the end of 1955 and for the first time in 18 years, there's a good chance of success.

But, in the intervening months, there'll be lots of troubles cropping up that can stall the move. The AFL craft unions already are stirring up the hornet's nest with a demand that the no-raiding pact be amended when it comes up for renewal in December of next year.

• **Complaint**—The Building Trades Dept. gripe is this: The pact does not spell out that craft unions shall have the right to perform all new construction work—even in industrial plants where the CIO is established as bargaining representative.

In the monthly Building and Construction Trades Bulletin, the craft unions served notice they will insist on doing all original construction; that they consider it a violation of the no-raid pact for any CIO unions to work on new construction, even though the pact doesn't cover this specific point.

This issue hasn't come up so far in the four months the pact has been in effect. But more than a dozen other disputes have been settled under the agreement, which bars signatories to the pact from trying to replace a rival union that is an authorized bargaining agent.

But if any CIO unions attempt to perform new construction, there's sure to be a battle royal with the AFL. In a not too veiled threat, the Building Trades Dept. warns that "It is manifestly unfair to expect AFL craft unions to sit idly by and not go out and organize maintenance men in production plants if these men are to be used to do work on new construction."

• **Nothing new**—This issue isn't a new point of conflict. AFL crafts have battled particularly with the CIO's United Steelworkers over performing new construction in steel plants organized by the steel union. That fight

reached a peak in 1952 when the steel union tried—and failed—to win a "no contracting-out" clause in their contract that would bar the industry from turning over original construction to outside contractors.

The no-raid agreement freezes current jurisdiction of the various unions. The CIO unions, with production and maintenance workers, are permitted to continue construction work where it involves maintaining existing facilities—and the AFL has no objection to this. Its position is confined strictly to new construction.

A CIO official, prominent in the merger program, minimizes the conflict over original construction. He says the CIO unions won't attempt to move in on this area. Even one Building Trades Dept. officer claims it's not too much of a problem and wasn't in favor of the department warning.

• **Steel isn't in**—However, it's significant that the CIO steel union has not joined the no-raiding agreement and gives no indication that it will do so in the near future. From the AFL side, only seven of the 19 building trades unions have signed the agreement—the bricklayers, elevator constructors, electrical workers, asbestos workers, marble, slate and stone polishers, plasterers, and plumbers.

Thus, the issue can be fought outside the jurisdiction of the no-raid agreement. But if it happens, it could spell considerable trouble for the overall merger program.

• **But unity is due**—After years of talking about unity, how did the AFL and CIO suddenly seem to find a solution? Primarily, it was the decision that merger was worth all the trouble it takes to bring it about. It involves, for union officials, some relinquishing of closely guarded powers and the willingness to permit outsiders to settle their disputes. (A professional arbitrator has final authority in the no-raiding pact.)

If and when unity comes, it'll be primarily through the efforts of presidents George Meany of the AFL and Walter Reuther of the CIO. They're responsible for drawing up a new constitution and can take credit for bringing unity this far along.

One important provision in the new merger program: that all unions will keep their autonomous powers, meaning they won't be swallowed up by larger rival unions if they move into the same camp. This is particularly important to the CIO, which has feared its unions would lose out to the AFL—a federation twice its size.

• **Political move**—A combined AFL-CIO organization, therefore, would be a rather loose alliance of unions which will continue to operate separately in their staked-out areas. The single federation won't bargain for the unions anymore than the AFL and CIO do now. Instead, merger will provide primarily a bigger platform and legislative lobbying activities.

This is the big reason for merger, and the reason it's apparently coming at this time. Under the Eisenhower Administration, labor has lost much of its influence in the White House and in Congress. Union leaders believe they can counteract this by uniting to present a more formidable front.

Merger won't include independent unions, such as John L. Lewis' United Mine Workers. Lewis is being promoted for a part in the program by the steelworkers' David McDonald and teamsters' president Dave Beck, but the unity teams won't have any part of him. The Beck-McDonald position also could cause trouble.

But the main problems stem from the jurisdictional rivalries of the individual unions. Two examples of such disputes under the no-raiding pact show what can happen—and why the unity plan is still up in the air:

• One involves a dispute between the CIO packinghouse workers and AFL meat cutters over bargaining rights at a Moultrie, Ga. meat company. The plant has been organized by the CIO, but the AFL union—after the no-raid pact became effective—petitioned and won an election to represent the employes. Umpire David Cole ruled that the meat cutters violated the agreement, but the Moultrie local has refused to back down—and the issue still isn't settled.

• The second concerns the CIO rubber workers and AFL chemical union at a rubber firm in Keokuk, Iowa. The CIO won bargaining rights from the chemical union in 1952, before the pact era. Recently, local AFL officials tried to regain control and petitioned for an election. But international chemical union officers intervened to block the move by taking away the local's charter.

Unity proponents are convinced they can overcome these historic union squabbles before their self-imposed deadline 15 months away. It's a good possibility they'll succeed, but if they don't a single labor movement will be out the window for a long time.

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OFFICIAL PROPOSALS

Bids: December 6, 1954

Construction of Passenger Station

Construction of a two story passenger station, steel canopy and shelter building, located in the Borough of Dunellen, County of Middlesex, New Jersey, in connection with the Dunellen-Plainfield Grade Crossing Elimination Project, under Order of the Board of Public Utility Commissioners, State of New Jersey

Sealed proposals for the construction of a two story masonry, steel and reinforced concrete passenger station (22'x57'), steel canopy (18'x146'), and shelter building (15'x42'), adjacent to track elevation work now in progress, will be received by The Central Railroad Company of New Jersey, at the office of the Chief Engineer of the Railroad, located at Jersey City Terminal, Room 44, Foot of Johnston Avenue, Jersey City, N. J., until 1:00 PM EST, Monday, December 6, 1954, and then be publicly opened and read.

Proposal forms, drawings, specifications, bond and insurance requirements may be obtained at the office of the Chief Engineer of The Central Railroad Company of New Jersey, at the above address, on or after November 22, 1954. Drawings and specifications may be obtained upon application at the office of the Chief Engineer on a deposit of Twenty-five Dollars ($25.00) per set. A refund in full will be made to bidders upon return of each set in good condition within 30 days of award or rejection of bids.

This work will be awarded as a general contract and the successful bidder will be required to perform with his own organization not less than 80% of the total value of the contract, except for materials or items of work which require specialized knowledge, craftsmanship, or equipment not ordinarily available in a contractor's organization.

Bids must be made upon the standard proposal forms furnished for this purpose by the Railroad Company and must be enclosed in sealed addressed envelopes bearing, on the outside, the name and address of the bidder and the identity of the contract work covered by the bid, and must be accompanied by a certified check drawn to the order of the Treasurer of The Central Railroad Company of New Jersey, in the amount of Ten Thousand Dollars ($10,000.). Bids and checks not enclosed in sealed addressed envelopes will be considered informal and will not be accepted.

The Railroad Company reserves the right to reject any or all proposals.

S. L. Mapes, Chief Engineer,
The Central Railroad Company of New Jersey,
Jersey City Terminal, Jersey City 2, New Jersey.

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Invitation No. DS-4288) will be received at Denver, Colorado, until December 21, 1954, for furnishing one (1) hydraulic turbine-driven, horizontal-shaft, centrifugal-type pumping unit with a capacity of 20 cubic feet per second under a total head of 226 feet for Amon Pumping Plant, Kennewick Division, Yakima Project, Washington. Delivery is desired within 365 days. For particulars, address Bureau of Reclamation, Building 53, Denver Federal Center, Denver, Colorado. W. A. Dexheimer, Commissioner.

Department of Commerce, Bureau of Public Roads, October 26, 1954. SEALED BIDS will be received at the office of the Division Engineer, Bureau of Public Roads, 1440 Columbia Pike, Arlington, Virginia, until 11:00 a.m., E.S.T., NOVEMBER 23, 1954, for Project 1F10-1G2, Blue Ridge Parkway, Amherst and Rockbridge Counties, Virginia. Grading, base course, the construction of a tunnel and a bridge and other work from Route US 60 to Otter Creek Bridge No. 2. Length: 12.678 miles. The approximate quantities of the more important items are: 460,000 cu. yd. Excavation; 32,000 tons Crushed Gravel or Crushed Stone Base Course; 1,600 cu. yd. Concrete; 175,000 lb. Reinforcing Steel, and 1,340 cu. yd. Stone Masonry; together with a tunnel about 600 feet long, with or without lining. Minimum wage rates have been fixed as required by law. Plans, specifications, and proposal forms are available upon request at the address given above or Bureau of Public Roads, 920 South Jefferson Street, Roanoke, Virginia. H. J. Speiman, Division Engineer.

OFFICIAL PROPOSALS

Bids: November 18, 1954

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law, and Article 2, Title 9 of the Public Authorities Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A.M., eastern standard time, on the 18th day of November 1954, by Henry A. Cohen, Director, Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 4, E. G. H. Youngmann, District Engineer, Barge Canal Terminal, Rochester, N. Y.						
Monroe	FAC 54-15	Rochester City: Inner Loop (Exchange St.-Main St. West) Proj. U-231(6), U-1089(5)	0.40	Asph. Conc. Ty. 2A	$25,000 Plans $15	$486,000
DISTRICT No. 6, J. H. Thomas, District Engineer, 30 West Main Street, Hornell, N. Y.						
Chemung	RC 54-105	East Corning-Horseheads Pt. 2, F. A. S. H. 53-6 Horseheads-Corning, S. H. 358 Horseheads Village, S. H. 5162, F. A. S. H. 53-5 Elmira-No. Elmira Extension, F. A. S. H. 54-16	2.65	18,630 L. F. Fencing	$850 Plans $10	16,000
DISTRICT No. 8, J. S. Bixby, District Engineer, Pleasant Valley Road, Poughkeepsie, N. Y.						
Ulster	CT 54-2	New York State Thruway—Catskill Section—Subd. 2 Ruby Gas Station-Restaurant Site (Type A)	....	Grading, Paving and Miscellaneous Work	$12,000 Plans $10	229,000
Orange and Rockland	CT 54-5	New York State Thruway—Catskill Section—Subd. 6 & 7 (Suffern-Harriman-Newburgh)	....	Furnish and Install 119,000 L. F. Fencing	$30,000 Plans $10	554,000
Ulster	CT 54-3	New York State Thruway—Catskill Section—Subd. 1 Malden Gas Station-Restaurant Site (Type A)	....	Grading, Paving and Miscellaneous Work	$12,000 Plans $10	212,000
Westchester	SMRP 54-1	Saw Mill River Parkway (Mt. Kisco-Katonah, Pt. 1)	3.06	Roadside Development	$2,000 Plans $10	102,000
DISTRICT No. 10, M. E. Goul, District Engineer, Montauk Highway at Little East Neck Road, Babylon, L. I., N. Y.						
Bronx	FAMDE 54-6	Major Deegan Expressway (Cont. No. 9) Proj. UI-1082(21)	7.20 Exp. (1.28 Acc.)	9" Colored Cem. Conc. Pavement 2 @ 36' Wide = 3.43 Mi. Cem. Conc. Pavt. (Acc. Rds.) = 1.28 Mi. Miscell. Work = 3.77 Mi.	$154,000 Plans $100	2,020,000

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts and Accounts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "General Information for Bidders" in the proposal, specifications, and contract agreement, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Laws, as set forth in "Instructions to Bidders."

When optional types are permitted on contracts with federal funds, bidders must state in the space provided in the proposal the exact designation of the optional type upon which the proposal is predicated.

The right is reserved to reject any or all bids.

B. D. TALLAMY
SUPT. OF PUBLIC WORKS

Bids: November 18,1954

Contract No. Spec. SM-71

STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of Highway Law, sealed proposals will be received until 10:30 A.M., Eastern Standard Time, on November 18, 1954 by Henry A. Cohen, Director, Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y. for

SOIL EXPLORATION AND FOUNDATION INVESTIGATIONS AT VARIOUS SITES ON HINMAN CORNER-HILLCREST, TOWNSHIP OF CHENANGO, BROOME COUNTY, WHICH CONSTITUTES CONTRACT NO. SPEC. SM-71

Maps, plans and specifications may be examined and obtained at the following offices:

(a) Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany 1, New York
(b) F. W. Donovan, District Engineer, 71 Frederick Street, Binghamton, New York
(c) Charles Schaefer, Department of Public Works, 270 Broadway, New York City.

The deposit for a set of plans, specifications and proposal forms is $5.00. A refund in full will be made to bidders for return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

The Engineer's estimate of cost for this work is $15,300.00.

Proposal for this contract must be submitted in a separate sealed envelope with the name of the contract plainly endorsed on the outside of the envelope. Proposal must be accompanied by draft or certified check, payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum of $765.00. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instruction to Bidders".

The right is reserved to reject any or all bids.

B. D. Tallamy
SUPERINTENDENT OF PUBLIC WORKS

Bids: November 18, 1954

Contract No. Spec. SM-73

STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of Highway Law, sealed proposals will be received until 10:30 A.M., Eastern Standard Time, on November 18, 1954 by Henry A. Cohen, Director, Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y. for

SOIL EXPLORATIONS AND FOUNDATION INVESTIGATIONS AT VARIOUS SITES ON THE NEW YORK STATE THRUWAY, ERIE SECTION, SUBDIVISIONS E1A, E1B, E2A, E2B, E3A and E3B, FROM PENNSYLVANIA STATE LINE TO ROBERTS ROAD, CHAUTAUQUA COUNTY, WHICH CONSTITUTES CONTRACT NO. SPEC. SM-73

Maps, plans and specifications may be examined and obtained at the following offices:

(a) Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany 1, New York
(b) Mr. C. R. Waters, District Engineer, State Office Building, Buffalo, New York
(c) Mr. Charles Schaefer, Department of Public Works, 270 Broadway, New York City.

The deposit for a set of plans, specifications and proposal forms is $5.00. A refund in full will be made to bidders for return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

The Engineer's estimate of cost for this work is $33,900.00.

Proposal for this contract must be submitted in a separate sealed envelope with the name of the contract plainly endorsed on the outside of the envelope. Proposal must be accompanied by draft or certified check, payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum of $1,695.00. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instruction to Bidders".

The right is reserved to reject any or all bids.

B. D. Tallamy
SUPERINTENDENT OF PUBLIC WORKS

Bids: December 7, 1954

New Jersey Turnpike Authority

CONTRACT NO. N-14

Proposals are invited for Contract No. N-14 which involves the construction of the steel superstructure and concrete deck and other incidental work, for the Southeast Viaduct, extending from the Avenue E Interchange to the vicinity of Brown Place in Jersey City, Hudson County, New Jersey, all in connection with the construction of the Newark Bay-Hudson County Extension of the New Jersey Turnpike.

The principal items of work include:

Structural Steel	11,625,000 Lbs.
Metal Railing	6,770 Lin. Ft.
Reinforcement Steel	1,550,000 Lbs.
Concrete	7,500 Cu. Yds.

Proposals will be received at the New Jersey Turnpike Authority, Administration Building, New Brunswick, New Jersey, until 11:00 O'Clock Eastern Standard Time on the morning of December 7, 1954, at which time and place said proposals will be publicly opened and read.

Each bidder must submit with his proposal a Contractor's Financial and Equipment Statement.

Contract documents may be examined during office hours after November 9, 1954, at the office of the Authority and at the office of the Consulting Engineers, Howard, Needles, Tammen & Bergendoff, 55 Liberty Street, New York 5, New York. Contract documents will be furnished upon deposit of Fifteen Dollars ($15.00) for each set, upon application to the Authority. Contract documents are not required to be returned, and the payment will not be refunded.

NEW JERSEY TURNPIKE AUTHORITY
Paul L. Troast, Chairman

November 5, 1954

FOR FASTER SERVICE

send all proposal advertising to Classified Advertising Division, 25th Floor, McGraw-Hill Pub. Co., Inc., 330 W 42nd St, N. Y. 36, N. Y.

OFFICIAL PROPOSALS

Bids: December 1, 1954

Indiana Toll Road Commission
309 W. Washington Street
Old Trails Building
Indianapolis, Indiana

NOTICE TO BIDDERS

Contract C-33/34
Contract C-35
Contract C-36/37
Contract C-33/34 and C-35
Contract C-35 and C-36/37
Contract C-33/34, C-35 and C-36/37

Sealed proposals will be received by the Indiana Toll Road Commission at or before 11:00 A.M., Central Standard Time, December 1, 1954 for the performance of each of the contracts enumerated above.

CONTRACT NO. C-33/34

The grading, drainage, structures and paving of approximately 3.9 miles in Construction Section C-33/34 of the Indiana East-West Toll Road beginning at the west side of Christiana Creek at Toll Road Centerline Station 5015+49 in Elkhart County and extending eastwardly to a point about 952 feet east of County Highway 113 at Toll Road Centerline Station 5219+00 in Elkhart County, Indiana. The approximate quantities of the major items of construction are as follows:

Common Excavation ...	81,200 Cu. Yds.
Borrow	652,800 Cu. Yds.
10" Reinforced Concrete Pavement	130,250 Sq. Yds.
Culvert Pipes and Underdrains	6,400 Lin. Ft.
Cast-in-Place Concrete Piling	27,000 Lin. Ft.
Concrete for Structures.	5,100 Cu. Yds.
Reinforcing Steel	891,000 Lbs.
Fabricated Structural Steel	1,620,000 Lbs.

CONTRACT No. C-35

The grading, drainage, structures and paving of approximately 5.1 miles in Construction Section C-35 of the Indiana East-West Toll Road beginning at a point about 952 feet east of County Highway 113 at Toll Road Centerline Station 5219+00 in Elkhart County and extending eastwardly to a point about 60 feet west of County Highway 25 at Toll Road Centerline Station 5489+22.65 in Elkhart County, Indiana. The approximate quantities of the major items of construction are as follows:

Common Excavation ...	161,000 Cu. Yds.
Borrow	854,000 Cu. Yds.
10" Reinforced Concrete Pavement	143,000 Sq. Yds.
Culvert Pipes and Underdrains	4,500 Lin. Ft.
Cast-in-Place Concrete Piling	11,500 Lin. Ft.
Concrete for Structures.	3,500 Cu. Yds.
Reinforcing Steel	482,000 Lbs.
Fabricated Structural Steel	600,000 Lbs.

CONTRACT No. C-36/37

The grading, drainage, structures and paving of approximately 4.9 miles in Construction Section C-36/37 of the Indiana East-West Toll Road beginning at a point about 60 feet west of County Highway 25 at Toll Road Centerline Station 5489+22.65 in Elkhart County and extending eastwardly to a point about 1,338 feet east of County Highway 35 at Toll Road Centerline Station 5750+00 in Elkhart County, Indiana. The approximate quantities of the major items of construction are as follows:

Common Excavation ...	157,000 Cu. Yds.
Borrow	1,110,000 Cu. Yds.
10" Reinforced Concrete Pavement	135,000 Sq. Yds.
Culvert Pipes and Underdrains	8,200 Lin. Ft.
Cast-in-Place Concrete Piling	29,000 Lin. Ft.
Concrete for Structures.	6,600 Cu. Yds.
Reinforcing Steel	1,071,000 Lbs.
Fabricated Structural Steel	2,150,000 Lbs.

The work covered by Contracts C-33/34 and C-35; C-35 and C-36/37; and C-33/34, C-35 and C-36/37; which covers a combination of Construction Sections C-33/34, C-35 and C-36/37, is the construction as above described for the individual Construction Sections, taken together.

Copies of the Plans, Specifications and Proposal Forms for said Contracts are available for public inspection or purchase at the office of the Chief Engineer, Indiana Toll Road Commission, 309 W. Washington Street, Indianapolis, Indiana. These documents may be purchased from said Chief Engineer for the following sums, per set, which sums are non-returnable:

Standard Specifications for the Indiana East-West Toll Road ..... $ 5.00
Plans, Special Provisions and Proposal Forms, per set, per Construction Section $25.00

Informational Drawings

Cross-Sections, per set, per Construction Section $25.00
Soil Plan and Profiles, per set, per Construction Section ..... $ 5.00

All Proposals must be on the form prescribed by the Commission and must comply with the terms and conditions set forth in the Contract Documents.

Contractor's statement for qualifications on the forms supplied by the Commission will be required from all Bidders.

Each Proposal must be accompanied by a Proposal Guaranty in the amount of five (5%) percent of the total bid per Construction Section covered by the Contract. If the Bidder shall tender bids for two or more Contracts which include the same Construction Section, the Construction Section thus duplicated in the bidding need be counted only once in determining the total amount of the Proposal Guaranty. The Proposal Guaranty shall be in the form of an acceptable surety bond or a certified check on a solvent bank.

If the Bidder is an out of state corporation, he shall be required to furnish a certificate from the Secretary of State of Indiana as evidence that the corporation has complied with the Indiana Foreign Corporation Statutes, and that the corporation is authorized to transact business in the State of Indiana.

All bids must be received at or before 11:00 A.M., Central Standard Time, December 1, 1954, in the offices of the Indiana Toll Road Commission, 309 W. Washington Street, Indianapolis, Indiana. At said hour, the bid box will be publicly opened and the bids read.

The award of any of the above-enumerated Contracts, if any award be made, will be to the Bidder or Bidders whose Proposal or combination of Proposals is lowest and best for the performance of the work, taken as a whole and complies with all the prescribed requirements. The Commission reserves the right to reject any or all Proposals and to waive technicalities.

INDIANA TOLL ROAD COMMISSION
Dr. Dillon Geiger
Chairman

Charles W. Keating
Secretary-Treasurer

Bids: November 22, 1954

Construction of Interceptor Sewer

Separate sealed bids, addressed to the Board of Sanitary Commissioners of the City of Gary, Lake County, Indiana, for the construction of the Rhode Island Relief Interceptor Sewer and the Broadway Interceptor Sewer, as shown on the detailed plans and specifications for said work now on file in the office of the City Engineer, City Hall, Gary, Indiana, will be received at the office of the City Engineer, City Hall, Gary, Indiana at ten o'clock A. M. central standard time on November 22, 1954, and immediately following that time will be publicly opened and read aloud in Room 300, City Hall, Gary, Indiana.

The information for bidders, form a proposal, form of contract plans, specifications, forms of performance bond and non-collusion affidavit may be examined without charge at the office of the City Engineer, City Hall, 4th and Broadway, Gary, Indiana.

Copies of the contract drawings, specifications, contract and other forms as set forth above may be obtained at the office of the City Engineer, City Hall, Gary, Indiana. A deposit of Twenty Five ($25.00) Dollars will be required for each set of plans and specifications. Provided the documents are returned in good condition within thirty (30) days after the date of receiving proposals, Fifteen ($15.00) Dollars of the deposit will be refunded.

Each proposal shall contain the full name and address of the party or parties making the same, and all persons interested therein, and must be accompanied by a certified check on a solvent bank in the sum of 10% of total bid price made payable to the Board of Sanitary Commissioners, and to be by it held as a guaranty that in the event the bid is accepted and a contract awarded to the bidder, the contract will be duly executed and its performance properly secured, and in default thereof, said check and the amount represented thereby will be forfeited to the City as liquidated damages.

The successful bidder will be required to furnish a performance bond, satisfactory to the Board of Sanitary Commissioners, in a sum not less than one hundred per centum (100%) of the total price bid for the completed work, said bond to be that of an approved surety company or approved surety companies authorized to transact business within the State of Indiana.

Each proposal must be made upon the blanks furnished with the contract drawings and specifications and delivered at the office of the City Engineer, City Hall, Gary, Indiana, previous to ten o'clock A. M. on the day specified.

No bidder may withdraw his bid for a maximum period of thirty (30) days after the actual date of the opening thereof.

Attention of bidders is particularly called to the requirements as to conditions of employment to be observed and minimum wage rates to be paid under the contract.

The Board of Sanitary Commissioners reserves the right to waive any informalities or irregularities in the bids received, and to reject any or all bids.

CITY OF GARY, INDIANA
BY ITS BOARD OF SANITARY COMMISSION
HAROLD ZWEIG, PRESIDENT

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4284) will be received at Cody, Wyoming, until December 9, 1954, for furnishing labor and materials for Basin ubstation, Transmission Division, Wyoming, Missouri River Basin Project. Location: 6 miles west of Manderson, Wyoming, in Bighorn County. Principal items are: 500 cu. yds. excavation for substation site; 50,000 pounds furnishing and erecting steel structures; 2,550 lin. ft. furnishing and installing bare copper cable; 1,140 lin. ft. furnishing and installing conduit; 5,125 lin. ft. furnishing and installing wire and cable; and other work. Completion time 300 days. For particulars, address Bureau of Reclamation, Cody, Wyoming; or Building 53, Denver Federal Center, Denver, Colorado. W. A. Dexheimer, Commissioner.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4285) will be received at Ogden, Utah, until December 15, 1954, for furnishing labor and materials for earthwork, concrete pipe lines, structures and equalizing and wasteway reservoir, Weber Aqueduct, Weber Basin Project. Location: south of Ogden, Utah, in Davis and Weber counties. Principal items are: 78,200 cu. yds. excavation; 580 cu. yds. concrete in structures; 27,900 pounds furnishing and installing steel sleeves, nozzles, covers, cast iron pipe and fittings, and steel pipe and fittings; 24,000 pounds furnishing and installing outlet screen metalwork; 22,674 lin. ft. furnishing and laying 42-inch and 48-inch cylinder and non-cylinder concrete pipe; and other work. Completion time 700 days. For particulars, address Bureau of Reclamation, Ogden, Utah; or Building 53, Denver Federal Center, Denver, Colorado. W. A. Dexheimer, Commissioner.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4286) will be received at Ogden, Utah, until December 15, 1954, for furnishing labor and materials for: earthwork, plate-steel pipe lines, structures and equalizing and wasteway reservoir, Weber Aqueduct, Weber Basin Project. Location: south of Ogden, Utah, in Davis and Weber counties. Principal items are: 147,000 cu. yds. excavation; 660 cu. yds. concrete in structures; 18,300 pounds furnishing and installing cast iron pipe and fittings and steel pipe and fittings; 24,000 pounds furnishing and installing outlet screen mealwork; lump sum manufacturing, laying, and testing welded plate steel pipe over 30 inches diameter (approx. 22,176 lin. ft.); and other work. Completion time 700 days. For particulars, address Bureau of Reclamation, Ogden, Utah; or Building 53, Denver Federal Center, Denver, Colorado. W. A. Dexheimer, Commissioner.

Department of Commerce, Bureau of Public Roads, November 2, 1954. SEALED BIDS will be received at the office of the Bureau of Public Roads, 9 Capitol Street, Concord, New Hampshire, until 11:00 a.m., E.S.T., NOVEMBER 30, 1954, for New Hampshire Forest Highway Project No. 8-F, Part 1, Grafton County, New Hampshire, 3.153 miles grading, draining, selected borrow base course and other work west of Conway on the Swift River Forest Highway. The approximate quantities of the more important items are: 144,500 cu. yd. Excavation, 530 cu. yd. Cement Concrete, and 3,870 lin. ft. Metal Culvert Pipe. Minimum wage rates have been fixed as required by law. Plans, specifications, and proposal forms are available upon request at the offices of the Bureau of Public Roads, 9 Capitol Street, Concord, New Hampshire, or c/o Acadia National Park Office, Bar Harbor, Maine, or 1440 Columbia Pike, Arlington, Virginia. H. J. Speiman, Division Engineer.

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HIGHWAY DESIGN ENGINEERS
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Graduate mechanical engineer with at least five years' experience in Sheet Metal Building fabrication. Well established company located in major Midwestern city. Salary open. Age 32-44. Write full particulars to

P-4518, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

ENGINEERS

Heavy construction firm in Southern New Jersey has openings in the following positions:

***ESTIMATOR:* Recent civil engineering graduate preferred.**

***CHIEF OF PARTY:* At least 5 years experience in high type construction layouts. Recent engineering graduates also considered.**

Send resume and salary requirements to

P-4521, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

DESIGNING ENGINEERS
Experienced
Structural Steel & Foundation Design
Bridges, Conveyors, Highways
Draftsmen with varied experience
Mail complete resume' with salary requirements

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CIVIL ENGINEERS

Junior positions in California's huge highway program. High level professional experience with excellent promotional opportunities offered to recent college graduates in civil engineering. $376 to start with raise after six months. Positions open at this level only. Write Section E, State Personnel Board, 1015 L Street, Sacramento 14, Calif.

Expressway Engineers Wanted
Midwest engineering firm has openings for two experienced expressway engineers on supervisory level for design of roadway and interchanges and design of bridges and drainage structures. Complete information on background, work history, salary, etc. requested. All replies held strictly confidential.
P-4278, Engineering News Record
520 N. Michigan Ave., Chicago 11, Ill.

REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (36)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

BRIDGE—HIGHWAY Engineers—Designers—Draftsmen. For work on bridges, expressways and turnpikes. Location Midwest. Permanent positions with periodic promotions depending on experience and ability. Paid vacations, sick leave, hospitalization and life insurance. Include education, experience, reference and salary expected in application letter. P-4280, Engineering News-Record.

EXPERIENCED STRUCTURAL Steel Detailer for small shop in Middle West. Submit complete resume to Berger Steel Co., Inc., Lafayette, Indiana.

EXPERIENCED ESTIMATOR and Chief Engineer, capable of preparing estimates, helping price, purchasing, expediting and job management. Permanent position for top man with Mid-West general contractor specializing in industrial, commercial and public works. Send complete history, including education, past experiences, references, salary expected and photograph if available. P-4417, Engineering News-Record.

CIVIL ENGINEER — recent graduate preferred — on paving, sewer, bridge, etc. construction — by small well established firm of Engineers and Contractors. Excellent opportunity for bright young engineer. $300.00 per month starting salary — location Nothern New Jersey. P-4448, Engineering News-Record.

ESTIMATOR—EXPERIENCED to take off and price structural steel and miscellaneous iron work for buildings and bridges, by progressive firm in Eastern Virginia doing 8 to 10,000 tons yearly. Pleasant working conditions in modern air conditioned office. P-4519, Engineering News-Record.

CHIEF DRAFTSMAN for large Eastern structural steel fabricating shop. 10 years experience shop details for mill, office, buildings, bridges. Position permanent. Answers confidential. P-4492, Engineering News-Record.

SUPERINTENDENT—DREDGING operations. We have an opening for a qualified dredgeman, capable of estimating, organizing and supervising hydraulic and dipper dredge work. Qualified persons should submit a complete resume stating experience, education and salary requirement. All replies treated confidential. Interviews arranged for qualified applicants. P-4469, Engineering News-Record.

LICENSED PROFESSIONAL Engineer, New York State, or eligible for license. Design of Sewers and other municipal improvements. City over 100,000. P-4465, Engineering News-Record.

WANTED: ASSISTANT to Director of young and progressive Southern Port. Engineering degree and administrative training essential. Please give complete history, education, experience, age, family data, salary expected and availability by addressing Box P-4493, Engineering News-Record.

SHOPS SUPERINTENDENT for the City of San Diego. Age 21-52. Directing all activities of the Equipment Division—annual budget of $1,300,000, 750 pieces of equipment and 100 personnel involved. Salary $555, to $679. a month. Equivalent to Mechanical Engineering degree and five years responsible experience in field required. Address inquiries to: Room 453, Civic Center, San Diego 1, California.

CIVIL ENGINEER. Graduate. Immediate opening in office with Consulting Engineering firm of over 30 years. Location, Dallas, Texas. State experience, salary desired and when available. P-4481, Engineering News-Record.

SELLING OPPORTUNITY OFFERED

SALES ENGINEER — New England territory open with established national concern selling prefabricated metal products to engineering and construction markets. Positions offered are permanent and present excellent future with aggressive, progressive and expanding organization. Engineering degree desirable. Previous sales experience unnecessary. Ages 24 to 30. Car furnished. Complete training program. Salary and bonus. SW-4370, Engineering News-Record.

(Continued on following page)

CONSTRUCTION SUPT.

For General Contractor

Must be familiar with concrete construction, brickwork, etc. and capable of coordinating subcontractors work. State experience, when available and salary requirements.

P-4223, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

STRUCTURAL DETAILERS

Prominent firm in Cleveland, Ohio has opportunities for draftsmen experienced in the preparation of steel details for shop fabrication of industrial building frame works.

Good working conditions, paid holidays, established vacation and sick leave plans. Hourly rate.

Applications to be considered must give full particulars as to education, experience, and salary desired in first letter.

P-4462, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

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B.S. degree in mechanical or chemical engineering plus minimum five years' experience in operational and maintenance phases of steam electric power plant.

Write giving full particulars regarding personal history and work experience. Please include telephone number.

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AND SPECIFICATION WRITERS

Civil Graduates of accredited U. S. colleges. Must have not less than the following experience:

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Designers—5 years responsible work on structural steel and concrete including work on long span bridges.

Squad Leaders—3 years responsible charge of squad on structural steel detailing.

Specification Writers—With design and field experience for writing specifications for steel bridges, concrete structures, and highway construction.

Please mail complete resume together with salary required to:

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Excellent opportunity for Engineers qualified to design modern expressways and bridges. Also openings for recent Civil Engineering Graduates. Location in Harrisburg, Pennsylvania, with excellent living conditions. Include experience and salary requirements in first letter.

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Permanent opportunity to grow with progressive, expanding and leading organization in the wellpoint industry. Must be familiar with heavy construction. Civil engineering or equivalent background and sales experience desirable. Location between Oklahoma City and Omaha, to cover surrounding states. Considerable travel with all expenses paid. Replies held in absolute confidence. Send thorough resume of education, experience and qualifications to:

GRIFFIN WELLPOINT CORPORATION
Dept. P
881 East 141 Street New York 54, N. Y.

(Continued from preceding page)

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OVERSEAS PROJECTS Guide to most active construction-engineers, oil co's., gov't & U.S. groups hiring for foreign projects. Send $1. Cove-McKane Int. GPO Box 1265E, NY 1, NY.

POSITIONS WANTED

OFFICE MANAGER familiar all phases construction contracting business. Many years experience large projects Branch Offices Latin America. Speaks, reads, writes Spanish. Available immediately. PW-4525, Engineering News-Record.

CHIEF DRAFTSMAN of Structural Steel Fabricating Co. desires similar position as chief engineer or chief draftsman with a small established fabricator employing not more than 12 structural draftsmen. Have had 20 years experience in structural steel and reinforced concrete. PW-4365, Engineering News-Record.

CIVIL ENGINEER 30 years estimating, design, field supervision heavy construction. PW-4268, Engineering News-Record.

CONSTRUCTION SUPT. 20 years refinery chemical plant and general. Have good following. Also heavy estimating experience. Capable administrator. Will work as project manager, supt. or chief estimator, domestic or foreign. Speak Spanish. Would relocate. PW-4397, Engineering News-Record.

CONSTRUCTION SUPERINTENDENT — Can handle field and office. 24 years experience heavy construction and housing. Prefer bonus proposition. Job location immaterial. PW-4413, Engineering News-Record.

THOROUGHLY EXPERIENCED construction executive seeks contact with general contractor, preferably in New York area, requiring top man as executive or to handle large project, where volume and scope will permit full use of ability of man qualified to handle every phase of contracting, field and office, buildings and heavy construction. PW-4433, Engineering News-Record.

GENERAL SUPERINTENDENT — 25 years field and office experience, heavy and engineering construction. Desires position in middle Atlantic or southern states. Resume if desired. PW-4436, Engineering News-Record.

SALES REPRESENTATIVE: Now employed but desires change. Completing eighth successful year selling in south and southwest to contractors and heavy industry. 48 years old. Texas area preferred. PW-4430, Engineering News-Record.

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CIVIL ENGINEER, M.ASCE, 59, degrees, state licenses, 35 years experience; design, construction, and administration; bridges, parkways, thruways, airports, harbor works railroads, underpinning and foundations. PW-4482, Engineering News-Record.

CONSTRUCTION ENGINEER — graduate C.E. experienced as Project or Office Engineer Resident, division supt., field supt., estimating, scheduling, cost analysis. Also successful sales experience. Age 54. Salary $750-$850. Relocate. PW-4459, Engineering News-Record.

DESIRE POSITION of Chief Engr., dep't. head, or professorship. 34 yrs. Ph.D., License, 12 yrs. experience in routine and difficult design (also research) covering commercial, industrial, bridge, dock and underground structures. Specialization in soils and foundations. Excellent references. Reply PW-4474, Engineering News-Record.

CIVIL ENGINEER M.Sc. Age 29. Experience: 3 yrs buildings design. 3 yrs. bridges. Location N.Y.C. PW-4529, Engineering News-Record.

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RA-4485, Engineering News-Record 330 W. 42 St., New York 36, N. Y.

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Lorain 78 1½ yd. Diesel Crane, 100' boom, hi gantry, 15' jib, w/fairleads for drag work, good shape, sacrifice $12,500.00.

655-A P&H, 1½ yd. Diesel Crane, Ser. 6426, Cat. D-13000 Diesel eng., hi gantry, 80' boom.

Mdl. 77 Lorain, 1½ yd. Diesel Crane, Ser. 9163, 45-85' boom, 20' jib, wt. 40 ton.

Mdl. 501 Koehring #1071, 1¼ yd., Mdl. K Wisc. Gas eng., 60-80' boom, 18' jib, cap. 20 ton @ 12'.

Mdl. 304 Koehring, ¾ yd., #C5934, 35-50' boom w/jib & backhoe, wt. 20 ton.

Mdl. 255A P&H #8243, 30-40' boom, Chrysler gas eng., cap. 8½ ton @ 12'.

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2 Yd. Wms. Hercules digger, 6600#, with teeth.

1½ yd. Wms. Hercules Heavy Duty digger, #1732, wt. 6200#.

1½ Yd. Owen Rehandler, Type S10020, wt. 4750#.

1 Yd. Owen Type D heavy duty, size 136, w/teeth, wt. 4500#.

¾ yd. Blaw Knox size 673, w/teeth & ctwt., wt 3835#.

¾ yd. Kiesler Type N #70-5331, never used.

EXCELLENT SELECTION OF CLAMSHELL, CONCRETE AND DRAGLINE BUCKETS.

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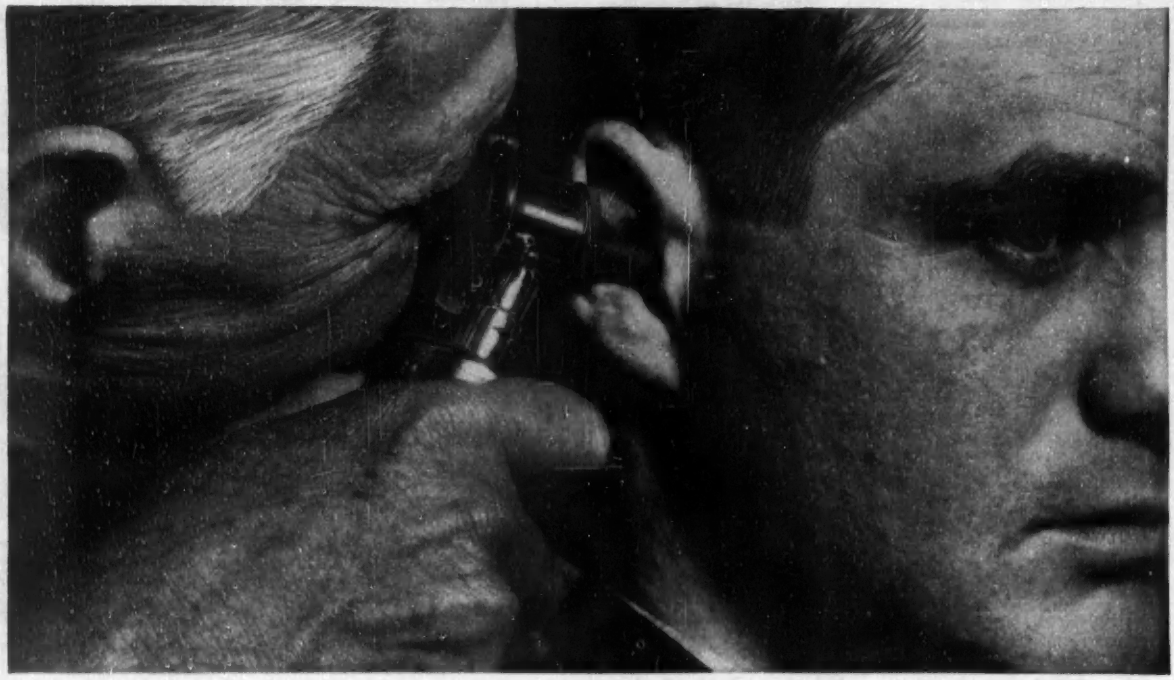
Fenestra 50 YEARS

"A salute to those who made it possible" *



Will you have to pay this worker's doctor bill?

A court may *order* you to pay damages.

Industrial noise is a serious problem. Claims for alleged occupational loss of hearing have been growing steadily in number. Right now, noise is costing industry more than $4,000,000 a day in worker fatigue, absenteeism, labor turnover and accidents. You can save yourself a lot of money now, and a lot of grief later, if you design your acoustics *right into your plant* just as you do your plumbing and electrical facilities. The way to accomplish that is with Fenestra* Acoustical Holorib Roof Deck.

For as little as *75 cents per square foot—installed* —you get: (1) perforated, heavy, 18-gauge Holorib Steel Deck, which provides a smooth-finished, metal-faced interior ceiling; (2) sound-absorbing element which also provides efficient heat insulation; (3) strong steel surface for support of 1" rigid fiberboard insulation and finished roofing.

Holorib is lightweight. It saves you building time, labor, materials and money. It's almost maintenance-free but, if you want to, you can wash or paint it time after time without cutting its acoustical efficiency a bit. And it is noncombustible!

There is no comparable building material. That's why you'll find Acoustical Holorib Roof Deck in the General Motors Technical Center, Warren, Michigan; Standard Pressed Steel Company, Jenkintown, Pennsylvania; Simmons Saw & File Company, Fitchburg, Massachusetts, and many other fine plants.

Write today for complete information—or have your architect write—and check on Fenestra floor panels and wall panels. Fenestra Metal Building Panels speed building and lessen the need for structural steel. Write E. A. Miller, Manager, Building Panel Division, Detroit Steel Products Company, Department ER-11, 2286 East Grand Boulevard, Detroit 11, Michigan. *Trademark

* Your need for a maintenance-free, noncombustible, built-in acoustical treatment encouraged us to develop Fenestra Acoustical-Structural Building Panels—a great advancement in building products.

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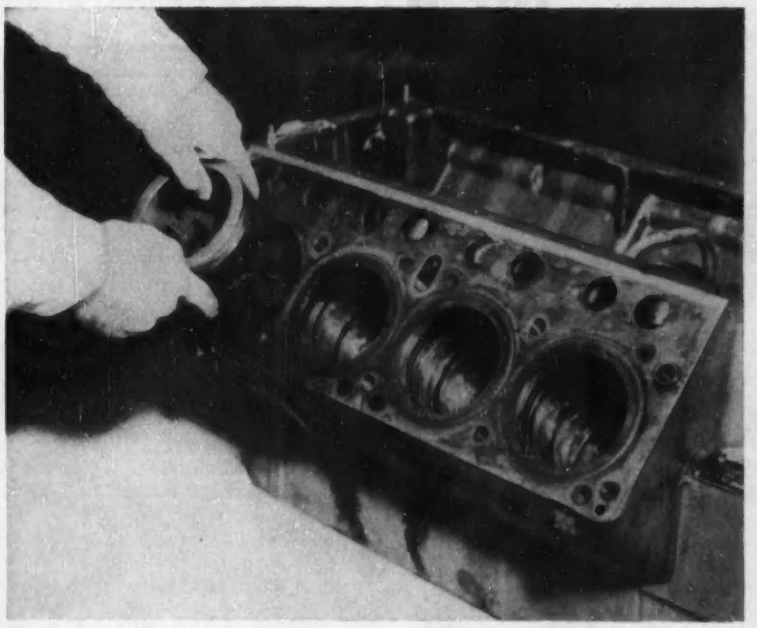

WET CYLINDER sleeves enhance the cool-running characteristics of the new Reo V-8's. Made of alloy cast iron, they are retained by cylinder head gaskets and plastic seals.

Reo Pairs New V-8's With New Trucks

Reo Motors has taken the wraps off the newest additions to its Gold Comet line of truck engines—a pair of low-friction V-8's.

The larger of the two engines has a 441-cu. in. disp. and develops 220 maximum gross bhp at a governed speed of 3,200 rpm. The second unit has a 390-cu. in. disp. and produces 195 gross bhp at the same governed speed.

The new engines have compression ratios of 7.30 to 1, and are designed for use of standard non-premium gasolines.

Like the in-line 6 cyl. engine in the Gold Comet series, first introduced in 1949, the new V-8's feature a short stroke, removable "wet" cylinder sleeves, and a high percentage of interchangeable parts.

Both engines weigh 1,211 lbs. each with accessories and flywheel housing, and 1,739 lbs. including clutch and transmission. They are 39½ in. long from the front of the fan to the rear of the flywheel housing.

Because of their dimensions and weight, the new V-8's will be installed in conventional truck-tractors that are only 96 in. long from the front of the bumper to the back of the cab, and which weigh less than 10,500 lbs. ready for the road. The 96-in. length permits the legal hauling of 35-ft. "square-nose" trailers within the 45-ft. overall maximum length established by many states.

In addition to powering a new line of truck models, the V-8's will be available in complete kit form for installation as replacement engines in all trucks, regardless of make.

Both the 195 and 220-hp. units have the same stroke, 4⅛ in. Bore of the larger engine is 4⅛ in., the smaller engine, 3⅞ in. Both engines develop 0.5 bhp per cu. in. of piston displacement.

The 220-hp V-8 develops 405 gross ft-lbs of torque at 1,600 to 2,200 rpm; the smaller engine, 345 ft-lbs at the 1,800-2,400 rpm range.

According to the company, large intake and exhaust valve ports, and an outstanding cooling system, contribute to the high efficiency of the new engine series. The cooling system has a capacity of 35 qts, pumped at such a rate that it requires only 5 secs. for water in the system to make a complete cycle. Only a 7-deg. rise occurs in the temperature of the water in its cycle through the engine.

Reo's new "A" series of truck models incorporate a number of design changes. The front end is blunted to insure the 96-in. length. Step-type fuel tanks to save weight and space are standard equipment. Engine accessibility is provided by a hood that swings forward and down for routine maintenance. An entire fender assembly also can be removed by unbolting only four bolts, permitting "walk-in" servicing.

Twelve models, including tandems, comprise the new "A" series. These range from the A-600 truck with a gross vehicle weight of 28,000 lbs to the A-733, a 6 x 4 tractor with a gross combination weight of 78,000 lbs. The new line also includes 6 x 2 trucks and tractors with a trailer-type "dead" axle in the tandem assembly. A five-speed transmission is standard on all the models. Reo Motors Inc., Lansing 20, Mich.

(*New Products continued on page 91*)

Lightweight Torque Wrench Permits Foolproof Operation

A new size 4, Type "F" torque wrench has a capacity of 4,800 in.-lb (Model 6 SD 4800) or from 100 to 500 ft-lb (Model 6 SD 500). Its design and light weight, 8½ lb, make the Tru Torq wrench usable for diesel engine overhaul, bridge construction, high line steel towers, railroad repair work, reinforced steel construction, earth moving equipment maintenance, and for many other types of work.

According to the manufacturer, the wrench will indicate accurate torque over all adverse operating conditions; the operator can push, pull, twist—from any position—while tightening a bolt without influencing the correct torque indication. Richmont, Inc., 922 So. Myrtle Ave., Monrovia, Calif.

ANOTHER MULTI-PURPOSE JOB

for a

This MARION 43-M, with 50' boom and 1 cu. yd. concrete bucket, helps build a Florida flood control pumping station. On the same job, the MARION 43-M helped excavate channel, build levees, drive piling and set up other equipment.

It is quickly convertible in the field to a 1 cu. yd. shovel, a 1 to 1½ cu. yd. dragline, clamshell, 20-ton crane, backhoe and pile driving service. It is big and strong for heavy duty service. It travels on a carryall without highway problems. The MARION 43-M is competitive in price. See your nearest MARION Distributor today.

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MARION, OHIO, U. S. A.

OFFICES AND WAREHOUSES

from 1 to 60 cu. yds.

IN ALL PRINCIPAL CITIES

OSGOOD•GENERAL, a subsidiary, manufactures excavating machines from ½ to 2½ cu. yds., truck cranes from 15 to 25 tons, Mobilcranes from 25 to 45 tons, and log loaders.

Joint Seal's Composition Simplifies Its Installation

A new low cost, rubbery paving joint filler is said to have greatly increased resistance to the solvent action of jet aircraft fuels, gasoline and oils. The new compounds are a modified thermoplastic polyloid elastomer, made in a solid form for hot melting and pouring or in consistencies suitable for pouring cold or extruding.

Tests made on the hot melt compound and compared with joint fillers which meet existing federal specifications for jet-fuel resistant fillers, reportedly show that the new compounds will meet all specification requirements and offer some very important advantages in addition.

For example, it is pointed out that the new compounds can be melted in regular bottom-fired kettles and will not char, scorch or form lumps, while others must be melted slowly in double boilers to avoid damage to the materials. Also, for easier handling, the new materials become more fluid at melt temperatures of 250° F. and over.

Complete immersion in jet fuels for many days is said to have no serious effect. The new compounds remained highly elastic, completely homogeneous and adhesive.

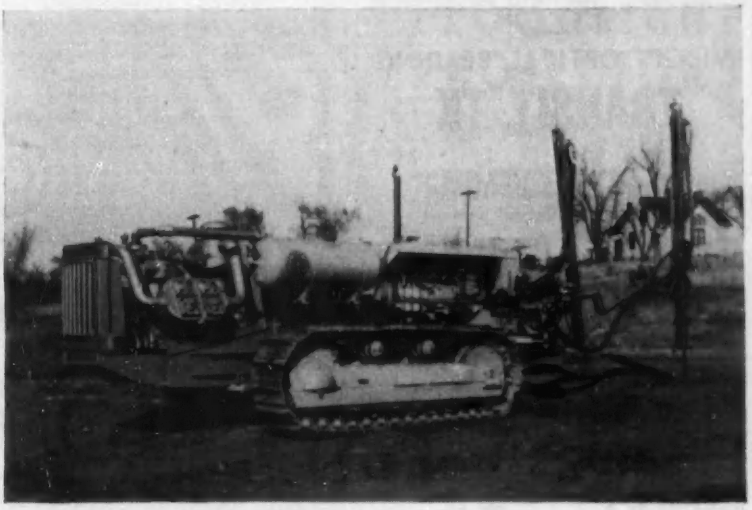
Production is scheduled to start immediately and the manufacturer says that prices will be lower than usual for specification compounds now used; additional job savings can be made because of easier and faster handling and placement. GREMS MFG. CO., KLAMATH FALLS, ORE.

11-yd Pull Scraper Bows In Allis-Chalmers Line

A medium-sized, rubber-tired, pull scraper, M108, with a 8.4 cu. yd. struck and 11 cu. yd. heaped capacity brings to eight the number of Allis-Chalmers pull scrapers now available.

Cable operated, the Model 108 is of welded box-type construction with an overall length of 27 ft. 4 in., overall width of 10 ft. 4 in., and in load-carrying position, a 7 ft. 8 in. height. Width of the cut is 8½ ft.; depth ranges up to 10 in.

Features of the new unit include a three-piece reversible-type cutting edge; free floating type front apron; a low and wide bowl with curved bottom and smooth interior; and positive forced ejection. Shipping weight is approximately 15,250 lbs. ALLIS-CHALMERS MFG. CO., TRACTOR DIV., MILWAUKEE, WIS.



Mobile Drill Rig Is Crawler Mounted

A self-contained mobile drilling rig that is reported to be highly efficient consists of Gardner-Denver rock drills on long feed mountings, hydraulic booms, and a complete air compressor for powering the drills, all mounted on a Cat D-8. The Gardner-Denver compressor assemblies are available in capacities of 600, 365 and 315 cfm for direct connection to the rear power take-off of D-8 Tractors, and hydraulic booms are available in various lengths. A choice of several drill sizes and several types of feed mountings provides the opportunity to have a tractor-mounted jumbo unit tailored to individual job requirements. Remote controls that permit all drilling and positioning operations to be controlled from a central station on the tractor for one-man operation, are also available. GARDNER-DENVER, CO., QUINCY, ILL.

(*New Products continued on page 92*)

"Mud Cannon" Has a Dirty Boom

Too late for the election campaigns, this mud slinging machine has but recently been put into production by its German manufacturers. Called the Mud cannon, the ditch cleaner consists of a conveyor belt housed in a semi-cylindrical boom. Excavated mud is cast to the side by an impeller directing the spoil through the horizontal chute. The gentleman at right watches as obsolescence overtakes him.

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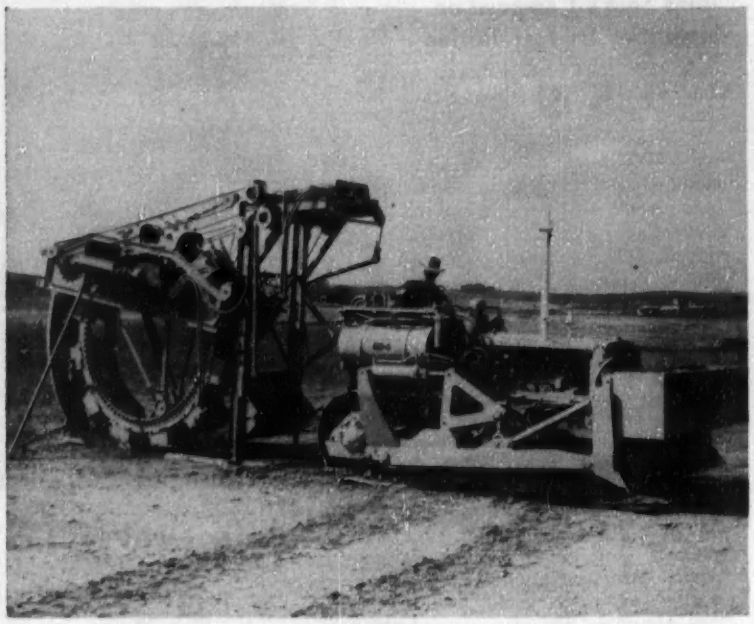

Detachable Ditcher Hooks to D4's

The Unimatic detachable ditcher, Model CW-4, is now in full production and available for delivery. The ditcher is an attachment for Cat D-4 tractors and reportedly can be detached within 30 min or less. The CW-4 will dig to a maximum depth of 5 ft 6 in. with the width of cut ranging from 15 in. to 24 in. This is an all hydraulic unit with all controls within the normal reach of the seated operator. The Unimatic drive permits the ditcher to move forward at any speed from zero to 26 fpm. A new conveyor has been designed to start, stop and reverse instantaneously, completely independent of the digging wheel. Improved pulley design is said to eliminate lateral belt-travel and new rubber guides and single pins contribute to the efficiency and life of the conveyor belt. The length of the CW-4 ditcher with a straight bulldozer is 22 ft 8 in.; width is 8 ft 3 in.; and overall height is 9 ft 11 in. The weight of the ditcher ranges from 6,660 lbs to 6,930 lbs. It can be transported from job to job—with the tractor—in one load. UNIMATIC CORP., P.O. Box 1166, TULSA, OKLA.

Acoustical Tile Doubles as Diffuser

Perforations that dot the surface of acoustical ceiling tile serve a dual purpose in the Armstrong Cork Company's engineering design room. They both soak up noise and serve as vents for jets of cool air.

The unusual combination of sound conditioning with air conditioning was made possible through the use of special air flow channels in the Armstrong Arrestone acoustical tile. Arrestone is a 12 x 24-in. perforated metal pan type tile, backed by a mineral wool pad that acts as a sound absorber.

Hollow metal air flow channels—1¼ in. wide x 23¾ in. long—inserted on the long side of each metal pan per unit and next to the dense mineral wool, have from one to ten slots in them that permit cool air circulating behind the acoustical tile ceiling to flow around the wool and out the holes in the tile. These jets of cool air streaming from the perforations are said to be thoroughly dispersed less than an inch from the tile surface.

The air-conditioning system installed at Armstrong includes an evaporative, condensor, compressor and air-conditioning unit that supplies 10,000 cfm of air. A comfortable room temperature, of 80° with 50% relative humidity maintained in the drafting room, requires 28 tons of refrigeration when the outside air temperature is 90° dry bulb and 78° wet bulb.

AIR FLOW CHANNEL lets air flow around mineral wool pad and out holes.

An Armstrong project engineer, responsible for designing the unusual air-sound conditioning job, reports that the "load conditions" he had to consider for the air-conditioning design included exposure on three sides as well as the roof plus 80 persons and an electric light load of 23,000 watts in the room. The room is on the top floor.

The acoustical ceiling, erected by mechanical suspension method, is about 18 in. below the original ceiling. Cool air is circulated into plenum spaces above the Arrestone from thirteen air discharges in the roof. The air conditioning fan unit manually started operates continuously with controls on mixing air dampers maintaining desired conditions. As the outside temperature rises above 64°F, automatic controls start the system.

Addition of the new system has also brought a problem of soot from a nearby railroad under control, and cigarette smoke is quickly dispersed. Expansion and contraction of paper due to temperature change has been eliminated as have perspiration stains on finished drawings.

Test Switch Improves Reliability of Detectors

A battery test switch for testing both transmitter and receiver batteries is now built into the latest Model 505 pipe detectors. The manufacturer states that the operator can now have positive assurance of maximum battery function at all times while detecting, tracing and estimating the depth of buried pipes, cable, conduit, etc.

By flicking the test-switch, an immediate reading of battery condition is possible. Batteries in poor condition may be replaced on the spot or extra replacement batteries taken into the field. The test-switch can also be installed in older detector units. The Detectron Corp., N. Hollywood, Calif.

Cement Transport Is Self Unloading

A transport which unloads itself automatically at the rate of approximately ½ ton per minute is now available for over-the-road hauling of many bulk materials that are normally handled by bag. The New Leader Bulk Transport is available with hydraulic or separate engine drive. Lengths up to 378 and capacities up to 713 cu ft are offered. Highway Equip. Co., 616 D Ave., N.W., Cedar Rapids, Iowa.

FLOODLIGHT PROJECTORS

For Night Lighting

Immediate Delivery

Model F. L. 6 burns 40 hours on 6 pints of kerosene. On telescopic tripod (left) with turntable top, 5 to 8 ft high, 60 pounds, $90 F.O.B. Chicago. Also available on short stand (below), 26 in. high, 38 pounds, $72.50.

Gives white light of 5,000 reflected candle power.

Throws beam about 75 x 150 ft.

Wind and rain proof.

Used by contractors, municipalities, railroads, industrial plants, utilities, park districts, mines.

Model AL-21. Excellent for use as hand inspection lamp or as small floodlight. Burns 12 hours on 1½ pints of kerosene, giving 2,000 candle power white light. Weighs 7½ lb., overall dimensions 9 x 9 x 11½ in. $36 F.O.B. Chicago.

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As Friction Material Wears

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As long as there's any amount of wearing surface left on the friction material, Lipe's Constant-Capacity Clutch never loses its torque capacity.

The reason? Automatic compensation for friction material wear through a unique application of the toggle lever principle. The toggles never go over center. As friction material is dissipated, their constantly increasing leverage builds up pressure in almost direct ratio to the losses sustained.

Arrangement and location of the toggles assure a uniform pressure application pattern. Every square inch of facing area engages simultaneously and in absolute parallelism. Creation of highly concentrated heat areas to cause spot burning is prevented.

More Long-Service Features

Soft Engagement—because the toggles absorb the initial energy of the springs . . . and because the speed of the toggle action fades as the pressure plate approaches the friction element.

High Thermal Efficiency—because the massive plate, ribbed for rapid radiation, is cooled by positively generated air currents.

No Servicing—because these self-compensating, non-adjustable clutches insure automatic internal adjustment throughout the life of the clutch facings.

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PUBLICATIONS

Vibrating screen—The new Pioneer Mesabi vibrating screen is the subject of a 16-page bulletin. Screen capacity, size selection and installation are fully covered and the bulletin is illustrated with numerous cutaways to show mechanical details and features of design. The installation drawings, data and specifications, accompanied by text material and tables are designed to enable proper selection of the correct screen for the job. "Pioneer Mesabi Screens for Rugged Jobs" is available from PIONEER ENGINEERING WORKS, INC., 1515 CENTRAL AVE., MINNEAPOLIS 13, MINN.

Sludge process—A new 6-page, 2-color bulletin, "The Dorrco Densludge Process' describes the applications, operation and advantage of this new process for the production of a thicker sewer sludge. Operating results from actual plant tests are included as well as flowsheets of three typical applications and a sectional elevation drawing of the specialty designed Densludge thickener. THE DORR CO., BARRY PL., STAMFORD, CONN.

Prestressed concrete—A new catalog entitled "Tensioning Materials for Prestressed Concrete" gives detailed information and charts on characteristic properties of Roebling's wire and strand and includes description and photographs of various construction jobs in which prestressing has been used. Tensioning applications are also described and illustrated by sectional drawings. JOHN A. ROEBLING'S SONS CORP., 640 S. BROAD ST., TRENTON, N. J.

Stairway construction—A new booklet describes the use of "Junior" channels in stairway construction. The booklet provides specifications for the channels and shows some of the buildings in which channels have been used as stair stringers. PUBLIC RELATIONS & ADVERTISING DEPT., JONES & LAUGHLIN STEEL CORP., 3 GATEWAY CENTER, PITTSBURGH 30, PA.

Reproduction materials—A new booklet featuring Post sensitized products is designed to serve as a practical guide to the selection and purchase of reproduction materials and supplies. A detailed listing of dry-developed print making papers, reproduction cloths and films, semi-moist direct process paper, blueprint papers and cloths, sepiatone negative and brown line papers, and contact type, wash-off

process reproduction cloth and paper are included. FREDERICK POST CO., 3650 N. AVONDALE AVE., CHICAGO 18, ILL.

Land clearing—Bulletin No. 21 is a two-color folder describing the LeTourneau heavy-duty land clearing line. One of the pages of the bulletin is devoted to cost analysis. R. G. LETOURNEAU, INC., LONGVIEW, TEX.

Metal lath—A new 16-page catalog, No. 253, contains illustrations and information on the complete line of Milcor metal lath and accessories. Diagrams show installation methods to be used for casing beads and access doors. Sizes, weights and packing information are shown for all products. ADVERTISING DIV., INLAND STEEL PRODUCTS CO., 4057 W. BURNHAM ST., MILWAUKEE 1, WIS.

Concrete check list—A reminder or check list of ten important items to consider just before you begin a concrete pour is available on heavy cardboard, 8½ x 11 in. The Atlas concrete checker, as it is called, reminds concrete bosses to make a last minute check on such important items as grade nails, accessories, boxes, sleeves, pilaster chamfer strips, center-to-center measurements on column bolts and many other items. A nail hole is pre-punched at the top of the card so that it can be hung up readily in full view. IRVINGTON FORM & TANK CORP., 20 VESEY ST., NEW YORK 7, N. Y.

Glass fiber expansion joints—A 4-page brochure describes the physical make-up and application of Fiberglas expansion joints. The booklet contains information concerning expansion joint application on projects involving highways, streets, sidewalks, parking areas, etc. Weight tables, widths and thicknesses are also included. GENERAL PRODUCTS DIV., OWENS-CORNING FIBERGLAS CORP., TOLEDO 1, OHIO.

Dragline bucket—Replacement parts for any make or model of dragline bucket are described in a new catalog. Parts catalog contains information on how to determine proper drag chain length; drag and hoist chain specifications; maintenance tips and alloy recommendations. The 28-pager is indexed and tabbed for speedy reference. Catalog No. 108-K. ELECTRIC STEEL FOUNDRY CO., 2141 N. W. 25TH AVE., PORTLAND 10, ORE.

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EDITORIALS

More Plastics for Construction

THE RAPIDLY EXPANDING plastics industry is hungrily eying the vast construction market, seeking a substantial slice of it as an outlet for its remarkable products. Plastics manufacturers were frank about this at the joint conference with the building industry held in Washington last month (ENR Nov. 4, p. 22) since they will sell only about 400 million pounds of their 3 billion pound output this year for building applications.

The conference, therefore, was fruitful in highlighting the characteristics of plastics that make them desirable for more construction uses and in calling attention to their limitations. Building designers could properly be impressed with the high strength-weight ratio of these new materials, their immunity to corrosion and rot, their light-transmitting qualities, their colors and their low thermal conductivity. On the other hand, plastics have other properties that would not fit current building design practice so readily and would probably make it more complex.

Plastics creep under constant load or when their temperature rises. They have a low modulus of elasticity, which also is time-and-temperature-dependent, and a high coefficient of thermal expansion. Strength may vary with direction. Durability is uncertain, because most of the materials are too new to permit acceleration tests to be correlated with experience. And practically nothing is known about their resistance to fatigue. These characteristics, however, while normally considered unfavorable from a structural viewpoint can be taken into account in design and so may not, in the end, restrict the use of plastics in construction.

But another important limitation—and one that did not receive adequate attention at the conference—is the relatively high price of plastics. Costs limit plastics at present to applications where they can do a much better job than other materials or where they can do something no other material or combination of materials can do. In some cases, though, costs can be reduced by incorporating cheaper fillers or reinforcement, or by laminating plastics to less expensive materials.

Plastics manufacturers say they are willing to spend millions of dollars on research to develop materials with the characteristics building designers want. Whether they can produce these materials at a price owners are willing to pay remains to be seen.

In any event, the eagerness of the plastics industry to obtain a bigger slice of the construction market should prove a boon to the construction industry and to the economy generally. The introduction of a new competitive force should spur manufacturers of building materials now in common use to improve their products, production efficiency and marketing methods. So if the plastics industry pushes ahead into construction, the result may well be better and less costly structures.

Neither Republican nor Democratic

THE ELECTION RESULTS should have no effect on the chance of favorable congressional consideration of the "grand plan" for a modern system of highways proposed by the President. In the first place, congressmen of both parties have for years supported more adequate highways, invariably voting funds up to the limit they felt the public would stand for. Also, in the week preceding election, when prevailing opinion seemed to favor an overwhelming Democratic victory, those who were molding the Presidential plan for presentation to Congress in January seemed completely oblivious of the election. Just as happened so often during the war, Democratic and Republican labels merged into a replica of the national emblem.

That such a wartime atmosphere could pervade a large segment of Washington in peacetime, to say nothing of election time, is of more than passing significance. Only a problem of national importance, with more than a tinge of emergency character, could merit such attention. The fact that roadbuilding is finally being recognized in that light augers much.

It seems worth noting this similarity to a wartime emergency because it represents a new and dynamic approach to highway improvements. Congress itself instituted the new attitude when, after increasing federal aid more than 50% in its 1954 Highway Act, it directed the Bureau of Public Roads to determine the cost of "completing the several systems of highways." The bureau enlisted the aid of the American Association of State Highway Officials. Then the President gave the problem a dimension that none before had dared to voice. He told the state governors' conference that $50 billion additional should be spent in the next 10 years. The governors selected a committee to study the proposal, and the President appointed a committee of outstanding construction and financial experts to receive the governors' report and those from all other appropriate authorities and develop a plan that he could recommend to Congress.

It is this Presidential committee that has produced the wartime atmosphere in Washington. Under the able chairmanship of Gen. Lucius D. Clay, retired Army engineer and now a top-notch business executive, it has made its office in the old State Department Building a lodestone for information from all over the country on materials, manpower, equipment and money requirements and capacities. In the end it will be able to recommend a road improvement program that any Congress can consider on its merits. For roads are neither Democratic or Republican.

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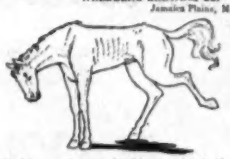
-1-

WHAT THEY SAY.

"We are hauling 100 cases of beer, weighing 80 lbs. each, 8000 lbs., and with the weight of the wagon, 1050 lbs., a total of 9150 lbs., with **one (1) horse** with ease, since we had our wagon equipped with **Timken Roller Bearing Axles.**

WALDBERG BREWING CO."
Jamaica Plains, Mass.



I kick because the wagon I pull is not equipped with

TIMKEN ROLLER BEARING AXLES.

I have to pull from 3500 to 4000 lbs., and it is killing me.

-2-

-3-

FORMERLY

TWO HORSES

Were required to pull this Surrey.

NOW

ONE HORSE

Can pull this Surrey by the bit.

-4-

COPY.

BUCKEYE BUGGY CO.

Manufacturers of FINE VEHICLES.

COLUMBUS, O., March 25th, 1901.

Timken Roller Bearing Axle Co.,
St. Louis, Mo.

Gentlemen—We are pleased to say that the Timken Roller Bearing Axle has proved a great success wherever we have used it.

One particular vehicle that we put it on, a large six-passenger carriage, we shipped to a customer in Chicago. He uses but **ONE HORSE** in pulling this large vehicle **with SIX PEOPLE in it.** This certainly shows a great saving in draft; and we are yet to have our first complaint regarding them.

We think that you have the right principle, and that that principle is made a success by the painstaking care which you exercise in fitting up the boxes and rollers. We expect to largely increase our use of your axles. We are,

Very truly,
(Signed) **Buckeye Buggy Co.,**
Per C. E. Jackson, Manager.

COPY.

KNIGHTSTOWN BUGGY CO.

WHOLESALE MANUFACTURERS for the Trade only.

"KNIGHTSTOWN, IND., April 11th, 1901.

Timken Roller Bearing Axle Co.,
St. Louis, Mo.

Gentlemen—Yours of the 8th to hand and will say in reply that the roller bearing axles we bought from you have given satisfaction. They were put on **a heavy surrey, usually a two-horse vehicle,** but with Timken Roller Bearing Axles **one horse can pull the surrey almost by the bit.** Yours respectfully,

Knightstown Buggy Co.

-5-

TIMKEN
Roller Bearing AXLES

Reduce draft over 50 per cent.

Require oiling only twice a year.

Can be substituted for ordinary axles on old vehicles.

Can be used with any standard wheel, old as well as new.

Are mechanically perfect. No breakages. Practically no wear.

Are easily adjusted. No play. No rattling. No lost motion.

Are adapted to all vehicles from the lightest speeding wagon to the heaviest truck and railroad car. Best on earth for automobiles.

-6-

Do your horses play out?

Do you want to double their serviceable life?

Do you want to double the earning capacity of your vehicles?

Do you want to decrease the number of horses required to do your work?

Do you want to reduce stable expenses?

Do you want to pass other drivers?

Are you tired of oiling your axles every day or two?

IF SO, EQUIP ALL YOUR VEHICLES WITH

TIMKEN
ROLLER BEARING AXLES.

FOR SALE BY

All First Class Carriage and Wagon Manufacturers and Dealers.

Write us for booklet "Saving the Horse"

Address all communications to

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Department F. St. Louis, Mo.

-7-

IT MAKES A HORSE LAUGH

To Equip His Vehicle with

TIMKEN ROLLER BEARING AXLES

BECAUSE

His work is made easy.
He can do double the work he could formerly.
His life-time is doubled.

HIS OWNER LAUGHS EVEN MORE

BECAUSE

The draft on his vehicle is reduced over 50 per cent.
The earning capacity of his vehicle is doubled.
He has the fastest vehicle if not the fastest horse.
He has to oil his axles only twice a year.

-8-

In terms of performance—

TIMKEN® bearings still give you more for your money than any other bearings you can buy

IN 1901, Timken® tapered roller bearings were used mainly in wagon wheels. They saved "horsepower", manpower, materials and equipment. They were the best bearings you could buy.

Today, 53 years later, Timken tapered roller bearings are used in thousands of applications. They *still* save horsepower, manpower, materials and equipment. And they're *still* the best bearings you can buy.

Why? Because we've never stopped improving Timken bearings. One example: we're the only U. S. bearing manufacturer that makes our own steel to control bearing quality every step of the way.

In terms of performance, Timken bearings *still* give you more for your money than any other make. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".

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